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ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

FEBRUARY 12TH, 1884.

JOHN EVANS, Esq., D.C.L., F.R.S., *Vice-President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From PRINCE ROLAND BONAPARTE.—Collection Anthropologique du Prince Roland Bonaparte. No. 2, Kalmouks; No. 10, Atchinois.

From Dr. J. E. LEE.—The Bone Caves of Ojcow (Poland). By Prof. Dr. Fred. Römer. Translated by the donor.

From the AUTHOR.—Record of Family Faculties. By F. Galton, F.R.S.

— Anthropologische Ergebnisse einer Reise in der Südsee und dem Malayischen Archipel in den Jahren 1879-1882. By Dr. O. Finsch.

— Une mine de silex exploitée à l'âge de la pierre au Mur-de-Barrez (Aveyron). By M. Emil Cartailhac.

— Comparison of Eskimo Pictographs with those of other American Aborigines. By W. J. Hoffman, M.D.

— The Carson Footprints. By W. J. Hoffman, M.D.

— Clavis Rerum.

- From the SECRETARY OF STATE AND EDUCATION, GUATEMALA.—*Anales Estadisticos de la Republica de Guatemala*, 1882. Tom. I.
- From the GERMAN ANTHROPOLOGICAL SOCIETY.—*Archiv für Anthropologie*, 1883. 1st and 2nd quarters.
- Correspondenz Blatt. 1883, Nos. 11, 12; 1884, No. 1.
- From the IMPERIAL ACADEMY OF SCIENCES OF VIENNA.—*Sitzungsberichte: philos.-histor. Classe. Band 101, Heft. 2; Band 102, Hefte. 1, 2; Band 103, Hefte. 1, 2. Register X.*
- *Sitzungsberichte math.-naturw. Classe. I. Abthlg., 1882, 6-10; 1883, 1-5. II. Abthlg., 1882, 7-10; 1883, 1-5. III. Abthlg., 1882, 8-10; 1883, 1-3.*
- *Almanach*, 1883.
- From the ROYAL HISTORICAL AND ANTIQUARIAN ACADEMY, STOCKHOLM.—*Teckningar ur Svenska Statens Historiska Museum. Tredje Häftet.*
- From the MANITOBA HISTORICAL AND SCIENTIFIC SOCIETY.—Annual Report for the year 1882, and Publications 1-4.
- From the HUNGARIAN ACADEMY.—*Pokucie. Tom. II.*
- *Zbiór Wiadomości do Antropologii Krájowej. Tom. VII.*
- *Rosprawy i Sprawozdania z Posiedzeń wydziału Matematyczno-Przyrodniczego Akademii Umiejętnosci. Tom. X.*
- *Pamiętnik [Akademii Umiejętnosci w Krakowie Wydział Matematyczno-Przyrodniczy]. Tom. VIII.*
- the ACADEMY.—*Boletin de la Academia Nacional de Ciencias en Córdoba. Tom. V. Entrega. 4.*
- *Atti della R. Accademia dei Lincei. Transunti. Vol. VII, Fas. 16; Vol. VIII, Fas. 1, 2.*
- *Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg. Tom. XXIX, No. 1.*
- From the ASSOCIATION.—*Journal of the Royal Historical and Archaeological Association of Ireland. No. 55.*
- From the COUNCIL.—Report of the Council of the Art Union of London, 1883.
- From the INSTITUTION.—*Journal of the Royal United Service Institution. No. 122.*
- From the SOCIETY.—*Transactions of the Anthropological Society of Moscow. Tom. XXXVI, No. 2; Tom. XLIII, No. 1.*
- *Fünfter Jahresbericht des Vereins für Erdkunde zu Metz. pro 1882.*
- *Bulletin de la Société Impériale des Naturalistes de Moscou. 1883, No. 2.*
- *Bulletins de la Société d'Anthropologie de Paris. 1883, Fas. 4.*
- *Proceedings of the Royal Society. Nos. 227, 228.*
- *Notulen van de Algemeene en Bestuurs-vergaderingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen. 1883, Nos. 1, 2.*
- *Tijdschrift voor indische Taal-, Land-en Volkenkunde. Deel. XXVIII, Afl. 5, 6; XXIX, Afl. 1.*
- *Journal of the Royal Asiatic Society. January, 1884.*
- *Bulletin de la Société de Borda, Dax. 1883, 4th quarter.*

- From the SOCIETY.—Proceedings of the Royal Geographical Society.
January and February, 1884.
- Journal of the Society of Arts. Nos. 1624–1629.
- From the EDITOR.—*Revue d'Ethnographie.* Tom. II, No. 6.
- *Revue d'Anthropologie,* 1884. No. 1.
- “Nature.” Nos. 740–745.
- “Science.” Nos. 46–51.
- Panjab Notes and Queries. Vol. I, Nos. 3, 4.
- *Revue Scientifique.* Tom. XXXIII, Nos. 1–6.
- *Revue Politique.* Tom. XXXIII, Nos. 1–6.
- The Science Monthly. January, 1884.
- The American Antiquarian. Vol. VI, No. 1.

The election of JOSEPH FOTHERGILL, Esq., was announced.

Mr. J. PARK HARRISON, M.A., exhibited some skulls and other remains from a cemetery at Wheatley, upon which Dr. GARSON made some remarks.

Mr. WORTHINGTON G. SMITH, F.L.S., exhibited two skulls of the Bronze age from a tumulus at Whitby.

Mr. HENRY PRIGG sent for exhibition two palaeolithic implements and a fragment of a human skull from Bury St. Edmunds.

Mr. R. MORTON MIDDLETON exhibited some human bones from Morton, near Stockton, upon which Mr. PARK HARRISON made some observations.

Mr. J. T. YOUNG read a paper “On some Palaeolithic Fishing Implements from the Stoke Newington and Clapton Gravels.” A discussion ensued in which Mr. W. G. SMITH, Mr. GREENHILL, Mr. BAILEY, Dr. JOHN EVANS, and Mr. A. L. LEWIS took part, and the AUTHOR replied.

Dr. EVANS, having vacated the Chair, was succeeded by Mr. LEWIS.

A paper by Dr. G. B. BARRON, “On a Human Skull found near Southport,” was read. This skull was described before the Institute by Professor George Busk in 1873 (see “Journal of the Anthropological Institute,” Vol. IV, 1874, p. 104).

The following paper was read by Miss Buckland:—

On TRACES of COMMERCE in PREHISTORIC TIMES.

By ANNE WALBANK BUCKLAND.

THE subject of commerce, as carried on in prehistoric times, is of interest alike to the anthropologist, the archaeologist, and the student of folklore and legends; for, if the extent of that commerce and its routes could be well defined, much that is obscure in the unwritten history of mankind would become

clear; since it is evident that variations in physical type, in language, in religion, in manners and customs, in legends and in the arts, would arise from a long-continued intercourse between barbarous and civilised, or semi-civilised races.

In the absence of written history, this intercourse can be traced only through legends, or by the vestiges discovered in tombs, in the refuse heaps known as kitchen-middens, or in the remains of long-buried cities destroyed by the hand of Time, by some sudden natural calamity, or by the inroads of enemies; and it is a singular and significant fact that, in the majority of cases, the relics brought to light by the spade of the archæological explorer, confirm in a wonderful manner legends which have been handed down from time immemorial.

As an illustration of this, I have thought it might perhaps be of interest to call attention, in the first place, to three cups of gold discovered—one some years ago in Cornwall, another at Mycenæ by Dr. Schliemann, and the third in the Necropolis of old Tarquinii. The first, of which a full description is given in the "Archæological Journal" for September, 1867, has been considered of sufficient importance to be figured in two of Dr. Evans's valuable works, that on "Ancient Stone Implements," and that on "Bronze Implements." The prominence thus given to this particular find impressed it strongly upon my mind, and I was therefore especially interested in seeing a gold cup which, as far as memory serves, is almost identical with the Cornish example, in the Museum at Corneto, being one of the numerous and very important relics found in the Necropolis of the ancient Etruscan city of Tarquinii. I was particularly struck with the crumpled-up handle, which seemed to suggest an identity with that of the British cup, as having been made of very thin gold, bent or waved, so as to resemble a ribbon. The third cup, that discovered by Dr. Schliemann among the treasures of Mycenæ, although bearing a strong general resemblance to the other two, differs from them in shape, but all three are undoubtedly of the same type: they are all of a corrugated pattern, apparently produced by the same means, that is, by beating out a thin plate of gold over a carved model of wood, stone, or perhaps bronze, the handle being rivetted on afterwards. A few other articles of a similar style, and almost of the same pattern, are known, one being an armlet of gold, found in Lincolnshire, and another the splendid gold corselet from Mold in Flintshire, now in the British Museum, but the pattern of the latter is much more elaborate, the plain ribs being alternated with bands of raised balls, the effect of which is very fine; nevertheless, Mr. Franks, no mean authority, classes this corselet with the Cornish cup and the Lincolnshire armlet, and also with

some other golden ornaments called lunulae, some of which are found corrugated, although the majority are plain thin plates of gold, in the form of a crescent, hence their name; their use is somewhat uncertain, although they are commonly regarded as ornaments for the head, or gorgets. And amongst them I must not fail to notice one of great size and beauty, discovered in Ireland, which Keating says was "a chain, or collar, or breast-plate, worn on the neck of the judge when on the bench, and that it would close and choke him if he gave wrong judgment." This splendid specimen, figured in Vol. V of the "Archæologia," is not only corrugated, but ornamented round the edge somewhat after the fashion of the Mold corselet.

The great majority of these moon-shaped articles have been found in Ireland, fifteen of them being in the museum of the Royal Irish Academy, whilst four have been found in Cornwall, two in Scotland, and some nearly resembling them are reported in French Bretagne and in Denmark. Of these, there was also one, and I think parts of others, in the case containing the cup, in the Museum of Tarquinia-Corneto, having been found in the Necropolis of Tarquinii, but whether *with* the cup I cannot say. There is yet another class of golden articles frequently made in a corrugated form, and abounding in Ireland, where they are supposed to have been worn as buttons or clasps to fasten the outer garment, although it is probable that they also served as money, and these also, but of a small size, reappear at Tarquinia-Corneto. From their shape they were possibly either the origin of, or derived from the *fibulae*, which are so numerous in Etruscan and Roman tombs. These *fibulae* were chiefly of bronze, and most of the articles to which I have referred above are assigned to the bronze age.

It is certain that the corrugated pattern of the cups and of the Mold corselet is similar to that of numerous bronze shields, chiefly Etruscan, whilst I must not omit to mention that the pattern of the Mold corselet is reproduced in a small but very elegant cap or diadem of gold, in the museum of the Royal Irish Academy. There are numerous other points of resemblance between articles found in ancient Etruria and Ireland, but at present I will content myself with mentioning one more only, namely, the bronze horns or trumpets, which visitors to the British Museum may compare, and will not fail to be struck with the strong similarity.

Mr. Blight has observed that "it is very remarkable that all the Cornish gold ornaments have their counterparts in Ireland," but I venture to think that it is still more remarkable that Irish and Cornish prehistoric ornaments, whether in gold or bronze, should have their counterparts in Etruria and Greece:

yet so it is, and I think it will be allowed that it is a matter of extreme interest and importance to trace out when and by what means the intercourse thus indicated took place.

It is the custom at the present day to assign certain forms of ornament and certain implements, whether of stone or of bronze, to stages of culture, to suppose that man, in his earliest stage, will naturally resort to a certain form of stone implement, and that consequently these things may have been invented independently in most, if not in all the various countries wherein they are found. That this may have been the case sometimes, and with the simplest tools and ornaments, I should be sorry to deny; but I believe, and have always held, that the more complex forms of weapons, and of ornaments—the advance in culture from the savage to the agriculturist, from the stone-user to the worker in metal—were the results of an intercourse carried on by means little known or understood, but which is indicated alike by language, by manners and customs, by variations of race-type, by traditions, and lastly, by relics widely distributed, yet evidently the work of the same people. No one will, I suppose, imagine that the three golden cups and the other articles I have mentioned could have been independently designed in Greece, in Etruria, in Cornwall, and in Ireland; therefore it becomes of great interest to ascertain how these things—and doubtless with them many others of a more perishable nature—were transferred from country to country. The greater abundance of some of the articles mentioned, in Ireland, would seem to indicate that they were manufactured in that country, and thence transferred to the other distant lands wherein they have been found; but it seems more probable that the pattern, having been derived from the shores of the Mediterranean, was afterwards reproduced by Irish goldsmiths from native metal. It is possible that an analysis might prove the source whence the gold composing these ornaments was derived, that of Ireland being exceptionally pure. That the workmen and the patterns came originally from the shores of the Mediterranean there can be little doubt. Dr. Schliemann, in describing the cup I have taken as an example, speaks of it as being of the well-known *furrowed* pattern of the Greeks, for which they had a definite name.

Mr. Gladstone thinks the ornaments found at Mycenæ may have had a foreign origin, and it is certain that some of them have their counterparts in Assyria; but ancient Greece collected her stores from many sources, and if some can be traced to Assyria, others were as clearly derived from Egypt. Assyrian, Greek, and Egyptian influences are plainly perceptible in Etruria, but in all these countries it is evidently the *idea* which has been

interchanged, to be worked out differently in each country, according to the genius of the people. It is similarity, rather than identity; but as regards the gold and bronze relics of Etruria and Ireland, there appears in many cases to be absolute identity: therefore it seems evident, either that the articles themselves were conveyed from the one country to the other by commerce, or that the people of the two countries were the same.

The first is, of course, the proposition which will be most generally accepted; nevertheless there may be a certain amount of consideration accorded to the latter. Irish legends invariably bring the heroes of their history, and the founders of their nation, from Greece or some Mediterranean land, and a certain amount of truth is allowed to attach to these legends, although it is generally supposed that by "Greece" some nearer land is indicated, probably Spain. But if we read these legends by the light of archæology, it does not seem improbable that the Mediterranean may at least have contributed its quota to the various legendary migrations.

The late Sir William Wilde pointed out that traces of the three legendary races, the Firbolgs, whom he identifies with the Belgæ, the Tuatha de Dannans, and the Milesians, are still to be found in Ireland.¹ The colony of Partholan, said to have been destroyed by pestilence, and the Tuatha de Dannans, celebrated as necromancers, would seem to denote the more civilised Eastern nations, Phœnician or Etruscan.

The great battle of Moytura, fought between the Firbolgs and the Tuatha de Dannans, gave the latter the ascendancy; but in this battle both sides are said to have used metal weapons, and to have had Druid priests and enchantresses. The Firbolgs, being defeated, are said to have retired to Arran, in Galway Bay, and "there erected the most stupendous stone forts of cyclopean unmortared masonry that now remain in Europe, with walls 18 feet thick, resembling those of Mycenæ."²

In reading these stories, and in seeing the very substantial proofs that the stories are not wholly mythical, we are tempted to believe that colonies, differing in race, must have been planted in Ireland at various times, and that the Pelasgi, or whoever were the constructors of the cyclopean buildings, who preceded the Etruscans in Italy, must also have found their way to Ireland. The Firbolgs of the battle of Moytura, it must be observed, are no longer the rude Belgæ, described by Sir Wm. Wilde as found entombed with flint weapons and shell

¹ *Tuatha* means Commander; *du*, Gods; *Dannan*, Art or Poetry, being the three tribes of this people (Warner).

² Sir W. Wilde, "Ireland, Past and Present."

ornaments, but with no remains of metal, covered with huge stones and a mound of earth ; they have attained to the knowledge of metal weapons, have chiefs or kings, a settled government, and a religion described as Druidical, and apparently similar to that of their opponents, the Tuatha de Dannans.

This change we can only suppose to have been caused by foreign influence, and for this foreign influence we must look to countries already acquainted with the use of metal, and practising that mode of architecture, and those religious rites which they would seem to have introduced among the Firbolgs, whose name Warner translates as "*creeping or cave men*," although Keating gives a legend that they were the descendants of the first Greek colonists, who had returned to Greece, been made slaves of there, and afterwards seized Greek ships and returned to Ireland, and he derives the term Firbolg from Fir, signifying *men*, and Bolg, a *bag*, from the leathern bags they had been compelled to wear, to carry clay dug from pits to the top of hills, to make a soil upon the rocks for cultivation.¹ I do not know what traces of the terraced cultivation, so much in use in Southern Europe, are to be found in Ireland, but the leathern bag may have another signification, for in the very interesting account given by Gmelin, Lepechin, and Pallas, of the mines worked on the south-east borders of the Ural mountains, presumably by the Arimaspi, prior to the conquest of the country by the Tatars, and before any knowledge of iron, we are told : "Besides some implements, the use of which is unknown, there were wedges and hammers all of copper that had been smelted, but without any particle of gold in them. Instead of sledges they seemed to have used large stones of a long shape, on which are to be seen marks which show that handles had been fastened to them. They seem to have scraped out the gold with the fangs of boars, and collected it in leather bags or pockets, some of which have been found."² Now, as there seems to be no doubt that it was the search for metal—whether gold, tin, or copper—which tempted foreigners to our shores in the remote times of which we are speaking, and as it is well known that gold was found in Ireland in considerable quantities, we seem to see in these Firbolgs, with their leather bags, a colony of miners from Asia or from Greece, establishing themselves where they found the precious metal, making themselves kings or chiefs over the barbarous natives, instructing them in the arts, especially of metallurgy, and giving to them their own name (Firbolgs). That gold was an article of

¹ Keating's "History of Ireland."

² Jacob's "Historical Enquiry into the Production and Consumption of the Precious Metals."

commerce in very early times in Ireland is proved by numerous discoveries of ingots, as well as of manufactured articles, in bogs, and in excavations for railways, &c. Vol. III of the "Archæologia" gives a long list of discoveries of gold in Irish bogs, amongst the articles being several ingots, some of which are described as of the form of "heaters for smoothing" three of them weighing seven pounds and a half; whilst the innumerable manufactured articles prove that it was not only miners and merchants who thus established themselves, but also artificers of no mean skill.

The question arises whether these artificers were the Firbolgs, or that later race, designated as Tuatha de Dannans, whom I have ventured to regard as Etruscans?

Returning to the three cups and other articles of gold with which I commenced this paper, I may point out that Mr. Evans compares the Cornish cup with one of amber found near Brighton, and with another of Kimmeridge shale found at Broad Down near Honiton, the latter being very similar in shape; but if we go thus far for analogies, we may perhaps be allowed still further scope, and refer to sculptured monuments in Tartary, upon which a figure appears holding a cup of a very similar shape, and also, if the engravings are to be trusted, of the same corrugated pattern, as though it were an object of veneration, or of some especial significance. It may possibly have been a golden cup similar to these, of which we are told that Darius the Great, having one only, valued it so highly that he placed it every night under his pillow.

We thus seem to be able to trace cups of this particular pattern from Tartary to Greece, Etruria, and Great Britain, and may ask whether they were manufactured originally in Tartary, possibly by the Arimaspi, of whom so many fables have been related, carried by their owners from place to place, perhaps for purposes of divination, and at last buried with them as their most precious possession.

If the Firbolgs were Scythians, and acquainted with metallurgic arts, it is of course possible that articles of this especial furrowed pattern might have been manufactured by them in Ireland, and thence dispersed; but if the Firbolgs are in any way to be identified with the rude miners of the Ural mountains, a description of whose implements I have given, they would not seem to have been capable of the delicate work exhibited in the cups, the lunulæ, the Irish diadem, the Mold corselet, the Lincolnshire armlet, and other articles; and we must therefore suppose them to belong to a later period, and to have been introduced by a second Scythic wave, or by another people. Seeing the strong resemblance between these

articles and those to be found in the museum of Corneto-Tarquinia, and remembering how famous the Etruscans were for their bronzes and gold work, I prefer to think that these articles were introduced by the Etruscans, either directly or indirectly; that they had obtained the pattern—at least of the cups—through Greece, the latter country having received it perhaps from Persia, and originally from Scythia.

With the Cornish cup were deposited articles of ivory, glass beads, pottery of a reddish-brown colour, and a bronze spear-head, with other fragments of metal, all consistent with that Etruscan ownership or origin which I have ventured to assign to it. “The Etruscans, masters of the sea,” says Dr. Birch, “imported enamelled ware from Egypt, glass from Phoenicia, shells from the Red Sea, and tin from the coasts of Spain or Britain.” Whether this trade was carried on wholly by sea, or whether a trade route existed at this remote period across Europe, cannot be very easily decided, but it seems to me that it would not be impossible to trace these early merchants by their wares, through the Swiss lake villages and Gaul to our own shores, and across Cornwall and Wales to Ireland, in which island there would seem to have been a more permanent settlement made. Nevertheless, it is easy to see that a coasting voyage round Spain, destined for Britain, might be driven more than once by storm or contrary winds to Ireland, which, once discovered, and found to possess metals of various kinds, would certainly be revisited, and probably made a dépôt for commerce, or a settlement for mining purposes.

Indications that one at least of the races thus visiting Ireland was Etruscan may, if I mistake not, be found, not only in the articles of bronze and gold I have described, but also in traditions and in the pages of history.

Cæsar's assertion that the gods of the Gauls and Britons were the same as those of Rome; that the Druids made use of Greek characters, although apparently ignorant of the Greek language:¹ the great influence possessed by women, especially in Ireland, where I believe the genealogies were traced in the female line as in Etruria—the extraordinary powers of divination ascribed to the Druids and to the Tuatha de Dannans, seem to stamp them as of Etruscan race, or at least as having derived their traditions, as well as their gold and bronze implements, and perhaps their mode of sepulture, from Etruria. The great tumuli of New Grange, Dowth, &c., were, unfortunately, rifled by the Danes, but the markings upon the stones might fairly be looked upon as Etruscan, and there is every

¹ Cæsar, Book VI, p. 17; V, p. 48; I, p. 25.

reason to suppose that the arrangement of the tombs, and the treasures they contained, were such as might still be found in those great tumuli, which evidently preceded the underground painted tombs in the Necropolis of old Tarquinii, if only some competent archæologist would devote to them the attention which has been given to our own great tumuli; and if that diligent and scientific research could be extended to the desolate site of the city of Tarquinii, I feel assured that many discoveries of infinite value to archæology and anthropology would reward the explorers. I have dwelt in this paper chiefly on the evidences of prehistoric commerce between Mediterranean peoples and our own islands, as afforded by gold and bronze articles, but the subject might be indefinitely enlarged, and I trust some one more competent than myself will take the matter up, and assign to each race its proper share in spreading civilisation by means of commerce from East to West. I have spoken more particularly of the Etruscans, because there seems a tendency to ignore all prehistoric commerce except as carried on through the Phœnicians, whereas it appears to me that Etruscan influences are far more evident than Phœnician, for I do not think that any of the articles I have mentioned as discovered alike in Ireland and in the Necropolis of old Tarquinii have been found among undoubtedly Phœnician remains, although there are doubtless others which may be referred to that source, and some which may also be traced to Greece and to Egypt. I feel convinced that a careful study of prehistoric commerce, as revealed by relics such as those I have indicated, when undertaken by competent workers, will eventually throw a flood of light upon the anthropology and archæology of Great Britain and Ireland.

In conclusion, I may say that I am quite aware that in pointing out the connection existing in the Bronze Age between Etruria and Ireland I am not bringing forward a new theory; in fact, General Vallancey many years ago gave as *one* indication of this intercourse, the fact that the survival of one form of divination, existing in a game played with five small stones, is called in Ireland *clocha tag*, or *tag* stones, from Tages, the prince of Etruscan diviners; but that to which I wish particularly to call attention is, that this connection appears to me to be made much clearer by recent discoveries in the course of the explorations in the Necropolis of old Tarquinii, which I think in the interests of science should be carefully watched, noted, and *extended*; for the discoveries made there since 1878 seem to me to supply one of the missing links in the chain of evidence connecting East and West in prehistoric times.

It may be of interest in connection with this subject to note

that a friend of mine has recently dug up, on the Goodrington Sands, Paignton, two vases of *tin*, pronounced by the authorities to be Roman, but which will perhaps turn out to be of earlier date.

DISCUSSION.

Mr. WALHOUSE said that he had little to offer on the subject, and that little related only to its Oriental aspects. Evidence of the extreme antiquity of communication between Europe, Western Asia, and the far East was continually accumulating. Even the folklore, nursery-tales and fairy stories of Europe were being more and more shown to be of Iranian or Buddhist origin. It had been long acknowledged that the apes and peacocks brought by Solomon's fleets must have come from the Indian Peninsula, and so no doubt did the perfumed gums and incense so largely used in the temples of Egypt, Asia Minor, Greece, and Southern Italy; the classic "Olibanum" was a product of Indian jungles, probably identical with the perfumes used to-day in Hindu temples and ceremonies. The beautiful variety of beryl, known as aquamarine, "of the colour of pure sea-water, and found only in India," as Pliny remarks, was well known in antiquity, and several engraved gems of it, of the best classic period, exist in European cabinets; now aquamarine stones of that particular colour have only been found at one particular spot in Southern India, about 140 miles from Calicut, on the Malabar coast, a port much frequented in the ancient traffic between the Red Sea and India, and it is noteworthy that deposits of Roman coins have several times been found in the neighbourhood of the aqua marine mine, which may not unreasonably be regarded as vestiges of ancient communication and traffic.

Captain E. C. JOHNSON, having been called upon by the Chairman to make some observations, said that the remarkable identity of the cups, ornaments, &c., found in the Irish mounds with those of Greece and Asia Minor must strike the most casual observer; and on drawings of those in the Royal Irish Academy being taken by Mr. Oscar Wilde to Greece, and compared with Dr. Schliemann's, they were found to be scarcely distinguishable from each other. This of course may be accounted for either on the hypothesis of a simultaneous development of certain art forms in various parts of the world, or on the supposition that both were made by the same people. This latter appeared to the speaker the more probable, strengthened as it was by the fact that the spiral and ammonite-shaped markings were found in the mounds of Ireland and also at Mycene and Hissarlick, also that there was certainly a considerable flow of commerce between the shores of the Black Sea and Mediterranean and Ireland in those early times. These art forms are our only guides through the tangled labyrinth of prehistoric legends. The early Nemedian invaders of Erin were a tribe from Greece who, at first unsuccessful, returned in a later wave as the Tuatha du Dannans. They appear to have had artificers skilled in metals amongst them,

as they were recorded as having made a silver hand for their king, Nuada, when he lost his own in battle with a kindred tribe, the Firbolgs. These artificers were probably, as Miss Buckland thought, Etruscans, or were largely indebted to the metal workers of Etruria for their knowledge of the art. The character of their work suggested a Turanian origin, into which Phoenician mythological ideas had entered, as shown by the demi-lune or horned ornament. The Turanian type was also very marked in faces of the peasantry in and over parts of Ireland. He had visited the tumulus of New Grange, and observed that while the mouth itself had an Etruscan form, the stones at the entrance were put up in the Druidical manner, differing from the arch gates common to Etruscan tombs. There was also a circle of stones outside, which may have had some connection with the sorceries and wizardries with which the Tuatha du Dannans were credited by their contemporaries.

Mr. PARK HARRISON, Mr. G. W. ATKINSON, Signor PAGLIARDINI, and Mr. A. L. LEWIS took part in the discussion; and Miss BUCKLAND replied.

FEBRUARY 26TH, 1884.

EDWARD B. TYLOR, Esq., LL.D., F.R.S., *Vice-President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From R. N. CUST, Esq.—A Language Map of Africa. By E. J. Ravenstein. To accompany "Modern Languages of Africa." By R. N. Cust.

From the AUTHOR.—The Dominion of Canada. By Joseph G. Colmer.

— GEOLOGICAL AND NATURAL HISTORY SOCIETY OF CANADA.—Report of Progress for 1880–82, and Maps.

— BERLIN ANTHROPOLOGICAL SOCIETY.—*Zeitschrift für Ethnologie*, 1883. Heft. VI.

— GERMAN ANTHROPOLOGICAL SOCIETY.—*Correspondenz-Blatt*. February, 1884.

From the ACADEMY.—*Atti della R. Accademia dei Lincei. Translanti*, Vol. VIII, Fas. 3, 4.

From the ASSOCIATION.—*Journal of the East India Association*. Vol. XVI, No. 1.

— Proceedings of the Geologists' Association. Vol. VIII, No. 4, and Annual Report, 1883.

From the SOCIETY.—*Bulletin de la Société d'Anthropologie de Bruxelles.* Tom. I, 1882–3.

— *Journal of the Society of Arts.* No. 1630.

From the EDITOR.—*Bullettino di Paletnologia Italiana.* 1883. Nos. 11, 12.

— *Matériaux pour l'Histoire de l'Homme,* 1884. January and February.

— “Nature.” Nos. 746, 747.

— *Revue Politique.* Tom. XXXIII, No. 8.

— *Revue Scientifique.* Tom. XXXIII, No. 8.

— “Science.” Nos. 52–54.

The election of the following new members was announced:—
Miss H. M. HARGREAVES and Miss HELEN E. PEARSON; Dr. WALTER H. C. COFFIN; and Dr. EMIL RIEBECK.

The following paper was read by Dr. E. B. Tylor:—

The NANGA, or SACRED STONE ENCLOSURE, of WAINIMALA, FIJI.
By the REV. LORIMER FISON, M.A.

[WITH PLATES I AND II.]

THE Nanga custom which I am about to describe is one of special interest, firstly, because in Fiji it is peculiar to certain tribes, their immediate neighbours, and, as far as I have been able to ascertain, all the other Fijian tribes, being unacquainted with it; and, secondly, because it is distinctly connected with the ceremony of initiation, or “making young men,” of Australia, and probably with the so-called “clubs,” or “secret societies,” prevalent throughout Melanesia.

If, with a chart of Fiji before us, we start from Nandi, on the west coast of Navitilevu (Plate II), and proceed east to the 178th meridian, which takes us about to the centre of the island, and thence along a south-south-west course to Korolevu,¹ on the south coast, we shall pass through the tribes who observe the Nanga; and everywhere, to the right of us and to the left as we go, there are tribes who are not initiated into its mysteries. Along the line of its prevalence there are differences of detail in the rites performed, and in the structure of the Stone Enclosure,² but the main object of the principal ceremony is

¹ Korolevu is marked “Red Bluff” on some of the charts.

² At Nandi the Nanga is within the war-fence of the town. This seems to be made necessary by the close proximity of hostile tribes. When thus placed, it is much smaller than the Wainimala Nanga here described. When it is within the town, the women make a circuit to avoid it in passing, and the children are forbidden to play in its neighbourhood.

everywhere the same, namely, the reception of young men into full membership in the tribe. Every full-born male is by birth a member of the community, but he is not a *man* until he has been received into the *Nanga*, and even then he does not attain full membership until he has attended two of its celebrations, one of which is that at which he was initiated. It will be seen that the effect of this regulation is to keep him on probation for at least two years.¹

The Constitution of the Nanga.

The Wainimala community, in addition to the ordinary social divisions into clans, &c., which have hereditary succession through males, is divided as to its adult males into three sections, corresponding to those of the *Nanga*, or Stone Enclosure. These will be seen in the accompanying sketch (Plate I), which may now be explained.

This sketch was kindly made for me by Mr. Leslie J. Walker, of the Civil Service, who worked from a ground plan drawn by one of our mission teachers, named Jimi Nakoravau, and from my description, which was based solely on information carefully drawn from the natives, I having never had an opportunity of visiting the Wainimala country in person. The drawing, therefore, can only be taken as an approximate representation, but there is no doubt that it is sufficiently correct for the purpose of showing the arrangement of the structure.² The bell-roofed house outside the farther end is the *Vale tambu* (Sacred House, or Temple). The division next to it, in which the *kava* bowl stands, is the *Nanga tambu-tambu* (Sacred *Nanga*). That in the middle is called the *Nanga levu* (Great *Nanga*), and the third section is the *Nanga sewu*, or Little *Nanga*. The entire structure is fenced round with stones set edgeways in the ground, the *katumbas*, or entrances, shown in the plan being merely low places easily stepped over. The two partition walls are about 5 feet high, by 3 feet at the base, narrowing to 2 feet at the top, which is neatly covered with flat stones.

The elders of the community are the *Lewe ni Nanga tambu-tambu*, or Members of the Sacred *Nanga*. These are called the *Vērē*, the very old men among them being the *Vērē matūa* (ripe, or old *Vērē*).

¹ The present tense is used throughout this memoir, but the *Nanga* ceremonies are no longer performed.

² An old Wainimala man, to whom I showed Mr. Walker's drawing, tells me that there are too many great stones in the outer wall, but that otherwise the structure is fairly represented. This, however, is not quite conclusive, for we can never be sure as to what a native sees when he looks at a picture.

Next to them, the men who have attended at least two initiation ceremonies are the *Lewe ni Nanga levu*. Their designation is the *Vūnilōlō*, the seniors among them being the *Vūnilōlō matūa*.

Lastly, there are the young men on probation, the *Vilavou*, who are *Lewe ni Nanga sewa*, though it will be seen that in the ceremonies they enter both the other divisions of the *Nanga*. Below these, and not within the *Nanga*, are the women, the uninitiated youths, and the children.

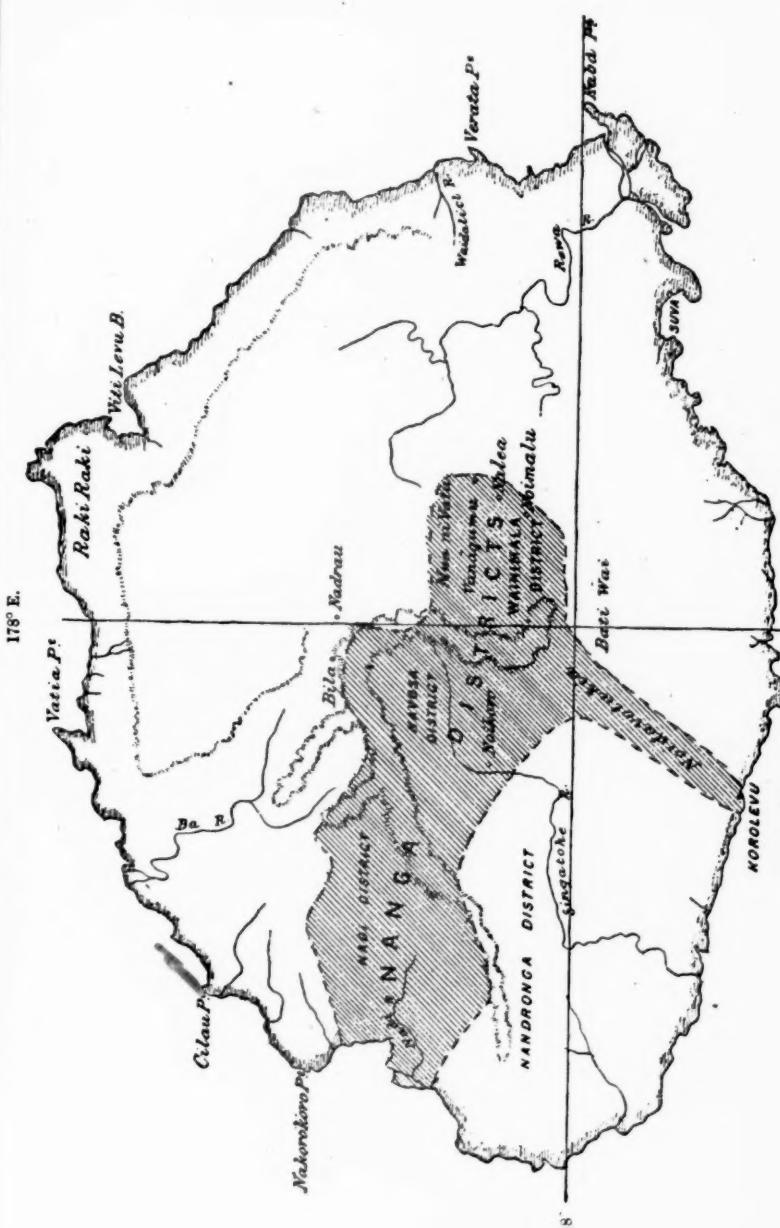
No alien can be a *Lewe ni Nanga*. Thus, one of the Wainimala tribes, called the *Kai Muairā*, has neither part nor lot in the matter, though it is called upon to help in the feast-making, and in the offerings of native cloth, &c., during the ceremony, and it has the privilege of sharing in the saturnalia which follow. This falls in with Australian custom, as shown by my friend Mr. Howitt, in his account of the Kroatun Kūrnai,¹ and in his intensely interesting narrative of the late Kuringal, or ceremony of initiation, which he himself summoned in his capacity as *Baiamban* (Master) by sending the mysterious *turndun* (bullroarer) to the various tribes.

This exclusion from the *Nanga* is evidently based on lack of qualification; and the most probable explanation seems to be that in all such cases the people so excluded are alien tribes which have attached themselves to the community, but have not become fully incorporated with it. It is certain that this is so in the case of the *Kai Muairā*. The Wainimala people are really *Navosā* tribes (see Plate II²) who migrated to their present seats many generations ago, subjugating, but not driving out, the *Muairā* folk, who were there before them. Some of the invaders subsequently made their way down to the south coast at Korolevu, and established themselves along the line of migration. These are the *Nōindāvotukia*, or Dwellers at Ndavotukia, a name which represents their ancient seats, not their present abode. These clans have a *Nanga* of their own, and do not go up to the initiation ceremony at Wainimala. The *Muairā* people, therefore, are alien clans, attached to the community, but not in full connection with it.

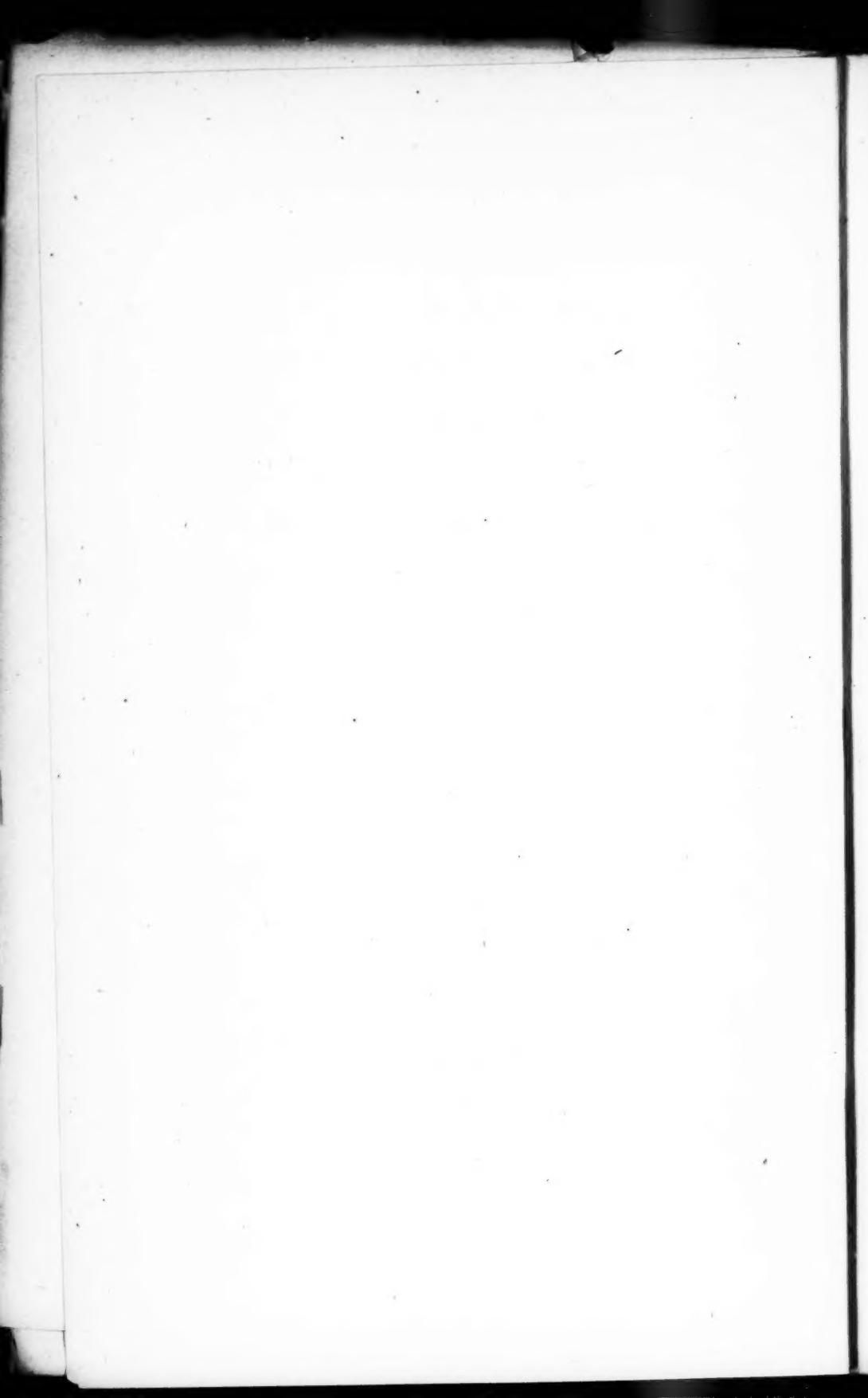
The invaders are of three principal tribes: the *Nōimālu*, the *Kai Vunanggūmu*, and the *Kai Nalēa*. All of these have connubium with the *Kai Muairā*; but, descent being through males, this fact does not affect the status of the latter people. The son of a *Muairā* woman by a man of the invading tribes is qualified for admission to the *Nanga*. He inherits the qualifi-

¹ "Kamilaroi and Kūrnai," p. 308.

² The map of Navitilevu, showing the *Nanga* country (Plate II), was drawn for me by Mr. J. P. Thompson, C.E., of the Survey Staff.



MAP OF NA VITI LEVU, SHOWING THE NANGA DISTRICTS.



cation from his father. But the son of a Muáirā man, whosoever his mother may be, is not so qualified. His father had no qualification to transmit to him. It is, however, interesting to note that, if a man of this birth leave his father's village, and attach himself to his mother's clan, as is sometimes the case, and marry into one of the affiliated clans, his son will be admitted into the Nanga, though the fault in his birth will always be remembered against him, and may be thrown in his teeth at any time if he take too much upon himself.

The Building of the Nanga.

"This is the word of our fathers concerning the Nanga," said an old Wainimala greybeard to me. "Long, long ago their fathers were ignorant of it; but one day two strangers were found sitting in the *rārā* (public square), and they said they had come up from the sea to give them the Nanga. They were little men, and very dark-skinned, and one of them had his face and bust painted red, while the other was painted black. Whether these two were gods or men our fathers did not tell us, but it was they who taught our people the Nanga. This was in the old old times when our fathers were living in another land—not in this place, for we are strangers here. Our fathers fled hither from Navosā in a great war which arose among them, and when they came there was no Nanga in the land. So they built one of their own after the fashion of that which they left behind them. And this was the building of it." All the able-bodied men were summoned to assemble at Narókorókoyáwa, the chief *koro* (village), and a council was held as to the building of the Nanga. Certain of the old Vērē matūa, belonging to a clan called the Kai Rukuruku, who are the priests, were deputed to choose the site. These men accordingly went forth, and, having selected an unfrequented spot about a mile from the town, on the other side of a stream which runs thereby, their headman—whom we may call the chief priest—poured out upon a rock, or at the foot of a tree, a libation of *kava* to the ancestral gods; "and, calling upon those who died long long ago by name, he prayed that the people of the tribe, both old and young, might live before them." Having performed this rite, the old men went back to the town, and sent all the able-bodied males to clear the chosen plot, and to collect great piles of stones ready for the building.

The outline of the Nanga was then marked out, and trees planted around it, principally *Lauthi* (Candlenut), *Vasili* *ndámundámu* (Red-leaved Dracæna), together with odoriferous shrubs such as *Thevūnga*, &c. This work was closed with

another libation and prayer, and a day was set on which a thankoffering feast should be made. On the set day the food prepared was carried to the *Nanga* site by the women; and its spiritual essence having been offered to the dead, its grosser particles were devoured by the living. The feast was in four divisions, made respectively by the *Vērē*, the *Vūnilōlō*, the *Vilavou*, and the uninitiated youths and children.¹ That prepared by the *Vērē* was eaten by the *Vūnilōlō*, and *vice versa*, while the *Vilavou* and the uninitiated exchanged their portions. The feast was closed with the usual libation and prayer; and the time having been appointed for the erection of the stone walls, the people dispersed to their villages.

At the time appointed they all assembled once more, bringing pigs, yams, &c., for their support during the progress of the work. Temporary huts were erected in the neighbourhood of the *Nanga*, in which the workmen slept, it being strictly forbidden for any one to return to the town until all was finished. All other work was suspended. Not even food-planting might be done while the *Nanga* was building: and, if any impious person transgressed this law, "he would only plant evil to himself and to his kinsfolk." The *Vērē* were fed sumptuously every day while the work was going on by the *Vilavou*, who provided baked pigs and other delicacies, especially eels, of which the feeble-toothed elders are very fond, together with the usual vegetable accompaniments.² These feasts were cooked at the *Nanga*, and consumed by the *Vērē* alone. Not even the *Vūnilōlō* *matūa* could get as much as a taste of them. They must provide for themselves. When the *Vilavou* take the uncooked food to the *Nanga* they are ornamented in their best style, and sing as they go the following chaunt, whose words are repeated over and over again:—

Ai sevusevu
Ki na *Nanga* levu—

("an offering to the Great *Nanga*"). A young man of the priest clan leads them on, having in his hand a green stalk of *kava* with the leaves attached. He conducts them to the place marked out for the *Nanga tambutambu*, and, taking his stand by the Sacred Bowl, which is set there filled with water (see Pl. I), he dips the *kava* branch into it, and sprinkles the youths one by one as they advance with their burdens. This

¹ I observed that the old Wainimala man made no distinction between the uninitiated men and the children. He classed them all together in his narrative as "*ko ira na ngone*" = they, the children.

² These feasts are repeated at every preparation of the *Nanga* for the initiation ceremony.

ceremony having been performed, they may now proceed to bake the pigs and other food in the hot stone ovens. Were any one of them to attempt the cooking without undergoing the previous baptism, he would become *sacer*, and some terrible calamity would surely befall him.

The building of the Nanga being accomplished, the workmen return to the town, having been preceded thither by the Vērē. When they enter the *rārā* they find the chief priest standing there, holding in his arms a large wooden dish piled high with cooked yams cut into small pieces. Every man goes up to him, and takes a piece of yam, which is eaten standing, and in solemn silence. No one may sit down while this rite is being performed. It is the *vūlūvūlu* (literally "handwashing"), or release from the tapu which has been laid on all manner of work, save only that immediately connected with the building of the Nanga.

The yams being eaten, the people then seat themselves in the *rārā*, and the priest, or one of the old Vērē, informs them that there will now be an interval of two years, during which they must be diligent in planting food, and in making all manner of valuable articles, especially weapons of superior finish. Let the *samusamu* also of the women—the rhythmical tap-a-tap of their grooved hardwood mallets used in beating out native cloth—be heard continually. Let it never cease. And let all men exercise self-denial in the matter of pork, that there may be many great pigs to offer up at the ceremony of initiation, which will take place at the end of the two years. The people respond with clapping of hands, and a deep-toned, long-drawn shout, and thereupon the assembly is dismissed.

The Ceremony of Initiation.

As there was an interval of two years between the building of the Nanga and the first initiation, so also there is a similar interval between the successive ceremonies. This period, however, is not necessarily restricted to two years. There are always a number of youths who are growing to the proper age, and the length of the interval depends upon the decision of the elders. Whenever they judge that there is a sufficient number of youths ready for admission, a Nanga¹ is appointed to be held; and thus the interval may be longer or shorter, according to the supply of novices. Other circumstances, too, may interfere with the holding of a Nanga. For instance, it may be deferred indefinitely by a protracted war; a famine may render it

¹ Strictly speaking, the Nanga is the Stone Enclosure, but the word seems to be used for the ceremony of initiation also.

impossible to supply the necessary quantity of food ; or epidemic disease may so thin the ranks of the candidates that years may elapse before a sufficient number can be mustered for presentation. In particular instances also a youth may be prevented from taking part in the ceremony by illness, or his initiation may be deferred as a punishment for misconduct. Hence it comes about that, while as a general rule the young men are eligible for admission at about the age of puberty, or a little after, a number of them may pass their majority before they are made members of the Nanga, and thus it is generally the case that bearded men, who have children of their own, are found side by side with mere youths among the Vilavou.

As the time appointed for holding the Nanga draws nigh, all the members of the community—not excepting even the Kai Muairā, who, as before stated, are not members of the Nanga—bestir themselves briskly in making the necessary preparations. Enormous quantities of yams are garnered, and, placed under a strict tapu, the numerous pigs which were set apart for the ceremony are plentifully fed, bales of native cloth are stored on the tie-beams of the house-roofs, spears of many devices are furnished, with cruel barbs ingeniously fastened along their points, and elaborate patterns of curious carving are diligently worked on clubs of various kinds. The day being near at hand, the final preparations are made. A broad pathway is cleared from the town to the Nanga, crossing the intervening stream at a fording-place. The *Vale tambu*, or Temple, is repaired ; the interior of the Stone Enclosure is cleared of all accumulations, and made perfectly clean ; temporary huts are built for the accommodation of the members of the Nanga ; and a substantial weatherproof storehouse is erected within the enclosure for storing the property which will be presented.

On the day appointed, the Vérē and the Vūnilōlō go first to the Nanga, and make their offerings, the chief priest having opened the proceedings by libation and prayer.

The heads of the novices are shaved clean,¹ and their beards too if they have any ; and this operation having been performed with a shark's tooth, or a small hard shell assisted by a fire-stick,² long rolls of native cloth are wound round their bodies.

¹ These men thus prepared present a curious appearance to the European eye, owing to the remarkable shape of their heads, which are narrowed by lateral pressure during infancy. Elsewhere in Fiji the fashion is to flatten the back of the head, which forces the skull upwards at the back, and extends it laterally. The shape of the head being thus altered artificially, craniological arguments as to these people are to be received with caution, for tribes of the same race have different fashions, and press their children's heads into different shapes.

² Razors are now commonly used, but I have often seen a mother shaving her child's head with a bit of glass, and biting a new edge on the instrument when it grew dull. Only a few days ago I saw a Solomon Islander shaving his

Each youth takes a spear in one hand and a club in the other, and thus accoutred they follow an old Vērē, one of the priest clan, whose business it is to conduct them to the Nanga. He leads the way, holding in his hand his carved staff of office, and they follow in single file, carefully treading in his footsteps. He conducts them to the Great Nanga, where the Vērē matūa and the Vūnilōlō are now seated, chaunting a song in a deep murmuring tone, which occasionally swells to a considerable volume of sound, and is supposed to represent the noise of the surf breaking on a far-away coral reef. The young men throw down their weapons before them, and, with the help of the Vūnilōlō, divest themselves of the huge folds of native cloth in which they are enveloped, each man revolving slowly on his own axis, while his attendant pulls at his bandage, and gathers in the slack. The weapons and the cloth are the novices' offering, and are put way in the storehouse by the Vūnilōlō, under the direction of the Vērē. The novices are then taken back to the houses built for their accommodation, and the ceremonial part of the proceedings is over for the day. It is now well on towards evening, the early part of the day having been fully occupied in the preparation of food, and afterwards in the "getting up" of the young men for their presentation in the Nanga. The ovens are now opened, the baked pigs and other savoury contents taken out, and a general feasting ensues until far into the night. This is repeated for four days, a like presentation being made on each occasion; and as each man is merely the central roller, as it were, of a huge bale of cloth, the amount offered is something considerable. Having thus made themselves acceptable to the ancestral spirits, who are supposed to be present at the Nanga, the novices are now ready for the final presentation on the fifth day.¹

On the morning of that day a huge feast is prepared; and, when their culinary labours are over, the young men, with their heads fresh shaven, are swathed in the largest and best rolls of cloth, and take in their hands the choicest weapons which have been reserved for this occasion. Following their leader, the old Vērē with the graven staff, their eyes fixed upon the ground that they may tread exactly in his footsteps, they proceed to the Great Nanga as on the former occasions. But where are the men who used to be chaunting there the Voice of the Surf? The Great Nanga is deserted and empty. The procession stops. A dead

comrade's chin with a fragment of glass in the public street of Suva. He used neither soap nor water, and yet he effected a clean shave, which would have done credit to a barber.

¹ If the supply of food be limited, the ceremony is shortened, two presentations being made on each day, the final one taking place on the third day.

silence prevails. Suddenly, from the forest a harsh scream of many parrots breaks forth, and then a mysterious booming sound which fills the young men's souls with awe. The old Vērē now moves slowly forward, and leads them for the first time into the Nanga tambutambu. Here a dreadful spectacle meets their startled gaze. Near the outer entrance, with his back to the Temple, sits the chief priest regarding them with a fixed stare; and between him and them lie a row of dead men, covered with blood, their bodies apparently cut open, and their entrails protruding. The Vērē steps over them one by one, and the awestruck youths follow him until they stand in a row before the high priest, their "souls drying up" under his strong glare. Suddenly he blurts out a great yell, whereupon the dead men start to their feet, and run down to the river to cleanse themselves from the blood and filth with which they are besmeared. These are the Vērē with some of the Vūnilōlō matūā, who represent the departed ancestors on the occasion, the blood and entrails being those of many pigs which have "fallen for that night's repast." The scream of the parrots and the mysterious roaring sound were made by hidden performers, the latter being produced by blowing strongly into a bamboo trumpet, the mouth of which is partially immersed in water.¹

The dead men having come to life again, the novices offer their weapons and the bales of native cloth in which they are swathed. These are removed to the storehouse, and the young men are made to sit down in front of it. The chief priest now relaxes the sternness of his demeanour, and becomes a remarkably lively old gentleman. Dancing to and fro from one side of the Nanga to the other, he cries in stridulous tones, "*Uē, ā-uē, āo ūvēi!* Where are the people of my *longa* (enclosure)? Are they gone to Tongalevu? Are they gone to *Tumbalevu* (the deep sea)?" Presently a deep-toned chant is heard, and the revivified dead, cleansed and ornamented, come from the river with a rhythmical movement timed to their solemn chant.² They take their places in front of the young men, and silence ensues. Four of the Vērē matūā come in, one bearing a cooked yam carefully wrapped in leaves so that no part of it is touched by his hands; the second brings a piece of baked pork, similarly enveloped; the third, a

¹ This bamboo trumpet seems to be the equivalent of the Australian bull-roarer. It is never sounded by the Wainimala folk, excepting at the Nanga. It would be impious to sound it for mere sport.

An inferior kind of bullroarer is used in Fiji—a piece of split bamboo swung round on a string. But it is a mere child's toy, and is not used in the mysteries.

² The sound of the chants is solemn enough, but the words of some of them appear to have little meaning. Others are filthily obscene.

drinking cup of cocoanut shell or earthenware filled with water, and wrapped round with native cloth; while the fourth carries a napkin of the same material. The yam-bearer puts the end of his yam to the mouth of each novice in succession, and they nibble small bits from it; the pork is tasted in like manner; the water follows, the youths merely wetting their lips; and last comes the napkin-bearer, who wipes their mouths. They are now addressed by the chief priest, or one of the very old men, who warns them solemnly against disclosing to the uninitiated any of the mysteries they have seen and heard, and assures them that the vengeance of the gods will most certainly overtake them if they are disobedient.

This ceremony being over, all the Lewe ni Nanga come forward, and each man presents to the novices a yam and a piece of nearly raw pork, which has been merely warmed through in the ovens, and requires further baking. The young men take this food, and go away to cook it for eating. In the evening twilight an enormous pig, which was specially set aside¹ at a former Nanga for this occasion, is dragged through the *Vale tambu* into the enclosure, and there presented to the novices, together with others if necessary, sufficient to make them a plenteous repast.

They are now Vilavou, accepted members of the Nanga, qualified to take their place among the men of the community, though still only on probation. As children—their childhood being indicated by their shaven heads—they were presented to the ancestors, and their acceptance was notified by what (looking at the matter from the natives' standpoint) we might, without irreverence, almost call the *sacrament* of food and water, too sacred even for the elders' hands to touch. This acceptance was acknowledged and confirmed on the part of all the Lewe ni Nanga by their gift of food, and it was finally ratified by the presentation of the Sacred Pig. In like manner, on the birth of an infant, its father acknowledges it as legitimate, and otherwise acceptable, by a gift of food; and his kinsfolk formally signify approval and confirmation of his decision on the part of the clan by similar presentations.²

On the following morning, the women, who have been summoned by a messenger from the Vére, come up to the Nanga. Their hair is dyed of a reddish colour, and they are dressed in a number of *likus*—waistbelts of hibiscus, or other fibre, doubled over a string, thus forming a sort of fringe about

¹ There are many pigs of the Nanga thus set apart, but this particular pig is the Nanga pig *par excellence*.

² Illegitimate children are not thus recognised. The mothers are cared for in secret, and no formal presentations are made.

9 inches or a foot deep. These are tied on one over the other from the waist nearly up to the breasts, and give the women the appearance of being enveloped, as to that part of the body, in a neat thatch. We now begin to tread on delicate ground, but one may be permitted to say that, taking into consideration the postures they have to assume, it seems a pity that some of the thatching is not put on from the waist downwards instead of expending it all in the other direction. When the women come up none of the Lewe ni Nanga are in sight, excepting the Vérē matūa, who are seated in the Nanga tambutambu chanting a song called the *Vaya*, but all the other men are in hiding near by. Entering in single file at the Little Nanga, the women prostrate themselves, and crawl thence on their hands and knees through the Great Nanga into the Nanga tambutambu, where the elders are singing the solemn chant. The chief priest dips his hands in the Sacred Bowl, which is filled with water, and offers a prayer to the ancestral spirits for the mothers and for their children. This is called the *viluvilu* (hand-washing)¹ of the women, the priest's action being vicarious on their behalf. The prayer being over, the women return along the way by which they came, crawling over certain earth-mounds in the Nanga, which have been specially prepared for the occasion; and it must suffice to say that, when one of the mounds is topped and the descent on the other side begun, the desirability of a better arrangement of the *likus* suggests itself. The women, as they retire, chant a song called the *Ruerue*. When they emerge from the Nanga, the men who have been hitherto concealed rush upon them with a sudden yell, and an indescribable scene ensues. The accounts of my informants vary as to what takes place, probably because the proceedings are not uniform in all the Nangas, and also because with the imperfect materials at our command it is not easy to distinguish between other rites which are celebrated at the Nanga, and those of the initiation ceremony. But all my informants agree in stating that the men and the women address one another in the filthiest language, using expressions which would be violently resented on ordinary occasions, and that from the time of the women's coming to the Nanga to the close of the ceremonies very great licence prevails.²

¹ The *viluvilu* is in all cases a release from a *tapu*. Its meaning in this instance seems to be a temporary suspension of the *tapu*, which prevents women from entering the Nanga. None but males are qualified to enter it.

² Mr. Walter Carew, Commissioner for Tholo West, was assured by the old men of Wainimala that—at least on some occasions—the men rushed upon the women while they were in the Nanga, and that any woman laid hold of within the enclosure was for the time the lawful prize of her captor. But I have not

Various dances of great indecency having been performed, the women return to the town, and the men prepare to follow. The Vērē lead the way, taking nothing with them, but the rest of the Lewe ni Nanga ornament themselves with long trains of native cloth, and daub one another's faces and busts with black paint. The Vūnilōlō and the Vilavou being thus adorned, and holding a green bough in each hand, follow to the town. As they cross the ford they dip the branches into the stream to make them glisten in the sunlight, and shake them to and fro as they advance, their feet keeping time to a rhythmical chant. The Vērē are seated near two large candlenut saplings, which were concealed in the long grass during the previous night, and they welcome the new-comers with a deep-toned shout, "Uēō, uēō, nduāsā-ā-āmu!" to which the others shout responsive, and clap their hands crosswise in unison, producing a hollow sound.

The two saplings are then set up, and between them is piled the property which has been already presented. This is now supplemented by large gifts made by the Kai Muairā and others, who are not Lewe ni Nanga, but are connected with the community. Various parties of these men are concealed near the town, and bands of the Lewe ni Nanga go out to seek them, chanting a song which I am unable to interpret. Having found the hidden parties, they turn, and lead them to the spot where the poles are set up, and there they deposit their offerings. These proceedings may last for several days, during which an enormous quantity of property is accumulated, great feasts are devoured, and an almost unlimited licence between the sexes prevails. The Vērē matūa then share out the store of wealth which has been presented, taking excellent care of their own interests in the division, and they set apart a number of pigs to serve for the next ceremony. These beasts are henceforth sacred. They are the pigs of Nanga, and have the run of all the overflowings of the fleshpots in the villages where they are appointed to be kept. They are held in the greatest reverence. To kill one, excepting for sacrifice at one of the Nanga rites, would be an inconceivable act of sacrilege, and it is an act of piety to feed them. Men may be seen throwing down basketfuls of food before them as a meritorious offering, and calling the attention of the ancestors to the gift—"Take knowledge of me, ye who lie buried, our heads! I am feeding this pig of yours."

The last act of the ceremony is the *Sisili*, or Bath.¹ All the

been able to ascertain whether this licence is connected with the initiation ceremony, or with one of the other occasions on which the Nanga is used.

¹ I am not certain as to the time when the *Sisili* takes place—whether it is soon after the return from the Nanga, or not until all the property has been

men who have taken part in the Nanga rites go together to the river, and there carefully cleanse themselves from every particle of the black paint with which they have been bedaubed. The new-made Vilavou are then brought to the chief priest, and seated before him and the Vērē matūa on the river bank. He delivers to them an impressive discourse on the new position they have assumed, points out to them the duties which now devolve upon them, enjoins strict observance of the tribal customs, threatens them with the sure vengeance of the gods if they reveal the Nanga mysteries to the uninitiated, and especially warns them against eating the best kinds of yams and other vegetables. These, together with freshwater fish and eels caught in the river, are forbidden to them. They must present them to the elders, and content themselves with wild yams, and such articles of food as are not so highly esteemed. As the black paint with which they were adorned mingled with the water of the stream, and flowed away from them when they washed themselves, so also, if they disobey these injunctions, will the comely dark colour of their skins disappear, and leave them of a hideous pallor, a spectacle abhorrent to both gods and men.

Other Rites of the Nanga.

1. *Sacrifice and Thank-offering.*—The foregoing are the main ceremonies connected with initiation, as far as I have been able to ascertain them; but, in addition to them, there are other rites performed at the Nanga. In fact it is the Sacred Place where the ancestral spirits are to be found by their worshippers, and thither offerings are taken on all occasions when their aid is to be invoked. Every member of the Nanga has the privilege of approaching the ancestors at any time. When sickness visits himself or his kinsfolk, when he wishes to invoke the aid of the spirits to avert calamity or to secure prosperity, or when he deems it advisable to present a thank-offering, he may enter the Nanga with proper reverence, and deposit on the dividing wall his whale's tooth, or bundle of cloth, or dish of toothsome eels so highly prized by the elders, and therefore by the ancestors whose living representatives they are: or he may drag into the Sacred Nanga his fattened pig, or pile up there his offering of the choicest yams. And, having thus recommended himself to the dead, he may invoke their powerful aid, or express his thankfulness for the benefits they have conferred, and beg for a continuance of their goodwill.

As might have been expected, for some time after the given and shared out. But it is certainly the closing act of the ceremonial part of the proceedings.

Wainimala people abandoned heathenism, offerings were taken on the sly to the Nanga, and the Mission teachers used to keep a sharp look-out for footprints leading in that direction. One of them who visited it about two years after the nominal acceptance of Christianity¹ by the tribe, described it to me as filled with a thick growth of grass and weeds; but there were whales' teeth still lying on the wall of the Sacred Nanga, the bones of many pigs strewed the enclosure, and in the gateway an enormous hog with a fine pair of tusks was lying in an advanced stage of decomposition, showing that some of the people were still making sacrifices to the ancestral gods.

2. The *First-fruits of the Yam Harvest* are presented to the ancestors in the Nanga with great ceremony before the bulk of the crop is dug for the people's use, and no man may taste of the new yams until the presentation has been made. The yams thus offered are piled in the Great Nanga, and are allowed to rot there. If any one were impiously bold enough to appropriate them to his own use he would be smitten with madness. The mission teacher before-mentioned told me that, when he visited the Nanga, he saw among the weeds with which it was overgrown, numerous yam vines which had sprung up out of the piles of decayed offerings. Great feasts are made at the presentations of the first-fruits, which are times of public rejoicing, and the Nanga itself is frequently spoken of as the *Mbaki*, or Harvest.

Circumcision.—With the exception of the initiation ceremony, the most interesting of the Nanga rites are those connected with *Circumcision*. When a man of note is dangerously ill, a family council is held, and it is agreed that a circumcision shall take place as a propitiatory measure. Notice having been given to the priests, an uncircumcised lad—the sick man's son or one of his brother's sons—is taken by his kinsman to the *Vale tambu*, or God's House, and there presented as a *soro*, or offering of atonement, that his father² may recover. His escort make valuable presentations of property at the same time, and promises of more. These are graciously received by the priest, who sets a day on which the operation is to be

¹ I use the phrase "nominal acceptance of Christianity," certainly not in any sense depreciatory of mission work, but simply because it represents the actual fact. The turning of such a tribe from heathenism as a political movement (which was the case with the Wainimala folk) is nothing more than this in the first instance. It is only a certain class of platform orators at home who speak of such a movement as the "conversion" of an entire people, using the word in its theological sense. Missionaries in the field do not talk like that.

² "His father." If it were one of the sick man's brothers' sons who was taken, the term "father" would be none the less applicable according to the Fijian system of relationship.

performed. In the interval no food may be taken from the plantations excepting what is absolutely required for every day use, no pigs or fowls may be killed, and no cocoanuts plucked from the trees. Everything, in short, is put under a strict tapu, and all must be set apart for the great feasting which is to take place when the ceremony is performed.

On the day appointed, the son of the sick chief is circumcised, and with him a number of other lads whose friends have agreed to take advantage of the occasion. Their foreskins, stuck in the cleft of a split reed, are taken to the Nanga, and presented to the chief priest, who, holding the reeds in his hand, offers them to the ancestral gods,¹ and prays for the sick man's recovery. Then follows a great feast, which ushers in a period of indescribable revelry. All distinctions of property are for the time being suspended. Men and women array themselves in all manner of fantastic garbs, address one another in the most indecent phrases, and practice unmentionable abominations openly in the public square of the town. The nearest relationships—even that of own brother and sister—seem to be no bar to the general licence, the extent of which may be indicated by the expressive phrase of an old Nandi chief, who said, "While it lasts, we are just like the pigs." This feasting and frolic may be kept up for several days, after which the ordinary restrictions recur once more. The rights of property are again respected, the abandoned revellers settle down into steady-going married couples, and brothers and sisters may not so much as speak to one another. Nowhere in Fiji, as far as I am aware, excepting in the Nanga country, are these extravagances connected with the rite of circumcision.²

¹ Compare Zipporah's offering on behalf of Moses, Exodus iv, 25.

² Mr. Edward O'Brien Heffernan, Native Advocate, and Stipendiary Magistrate, kindly made, at my request, a special inquiry into the extraordinary licence attending the rite of circumcision at Nandi, and sent me a written statement concerning it, taken down by him from the lips of one Nemani Dreu, in the presence of the principal chiefs of Nandi, Vunda, and Sambeto. Subsequent inquiry more than confirmed the statement, which is unfit for publication. Of necessity in this memoir I omit certain particulars of almost incredible indecency, which I have privately forwarded to Dr. Edward B. Tylor. [The details of indecent dances and rites referred to may be left in MS., but it is of interest, as bearing on the argument as to early communal intercourse, of which such customs may possibly be ceremonial survivals, to notice that their principle is formulated in an accepted native phrase. On the fourth day, when the food is no longer *tabu*, but *tara* (permitted), and the great feast is prepared, it is said that there are no *taupei ni vuaka se alewa* ("owners of pigs or women").] Not only does it appear that the groups of tribal brothers and sisters (using this term according to the native system of kinship) are not excluded from this temporary communism, but another MS. account by Mr. Fison mentions their being intentionally coupled, falling in one behind another in the Nanga procession, with the accompanying chant in the most explicit terms,—

"Ne cégenia e tu e mata."

Concluding Remarks.

No Fijian custom has given me so much trouble to ascertain it as that of the Nanga; and, since the facts are new, and of considerable importance, it may be well to state the authority on which they rest. Vague rumours of strange practices among the hill tribes of Navitilevu reached me long ago from time to time, but it seemed to be impossible to get at any definite information concerning them.

For several years I tried in vain to ascertain them through our native mission agents who were stationed in the hill country. They told me the people either pretended ignorance, or refused to speak because they were bound to silence by "oaths to the dead;" and yet tantalising disconnected bits of information leaked out now and then. The old men especially were very reticent. They were evidently afraid to speak, and when by persistent questioning I got some fragment of description from them as to the less important parts of the subject, they were very uneasy, and anxious to escape from me. About a year ago, Nakorovau, the artist who drew the ground plan of the Nanga, and who is an old pupil of mine, sent me an account of the initiation ceremony which he had managed to extract from a young Vilavou, who had been made a Leweni Nanga at the last celebration before the tribe abandoned the practice. But the account was incomplete, there were many points in it which called for further inquiry, and it did not explain all the facts—*e.g.*, those connected with circumcision—which I had already in my possession. After much fruitless inquiry, I happily fell in with an elderly Wainimala man, who had been one of the Vūnilōlō matūa, and whose confidence I won by giving him a detailed account of the Australian Bora. He listened with all his ears, and with eyes opening ever more widely. Presently, while we were talking, a woman passed by, and lowering my voice, I said, "Hush! the women must not hear these things." This finished him. Covering his mouth with his open hand he said earnestly, in an awestruck tone, "Of a truth, sir, you are a Leweni Nanga. I will tell you all about it." And he poured out his soul. As he warmed in the narrative, his eyes sparkled, his lips quivered with excitement, his body swayed to and fro, and his arms waved in quick gesticulation such as is never seen among the coast tribes. Unfortunately, I had only one interview with him; and though I learned much from him, there are still many things to be sought out.

This rite seems at least open to interpretation as a remarkable case of "consanguine marriage" being kept up as a ceremonial institution.—[E. B. T.]

Sufficient, however, has been ascertained to convince me that the Wainimala Nanga is identical with the Australian Bora, and that, as I stated in my introductory remarks, it probably connects with the so-called club or secret society, which is found throughout Melanesia as far at least as New Britain, where it is called the *Dukduk*. But there is one important distinction between the Australian usage and that of Wainimala which must be noted. In some, at least, of the Australian tribes a young man is not permitted to take to himself a wife before initiation, nor indeed until he has served his subsequent probation of two years: whereas, among the Wainimala people, he may take possession of the girl who was betrothed to him in infancy, without any further ceremony, as soon as he considers her to be old enough. He announces his intention to his comrades, and they watch for an opportunity of seizing the girl in the forest, when the husband takes possession of her, but, (as far as I have been able to learn) without the "expiation for marriage"—to use Sir John Lubbock's convenient and appropriate term—which is accorded by so many Australian tribes.

The customs of the clubs or secret societies of the New Hebrides, Banks, and Solomon groups, when ascertained, will doubtless throw more light upon the Nanga mysteries. For what we may call the Nanga tribes in Fiji are evidently, both in custom and in language, more Melanesian, so to speak, than the rest of the Fijians. According to their traditions they came into the hills from the West. Establishing themselves first at Nandi, they made their way throughout the country shown in the map until they formed a connection with the southern coast at Korolevu. And the fact that they found the Kai Muáirā in the Wainimala country before them shows that they were immigrants of a later date.

The temporary licence between the sexes, and the suspension of proprietary rights in general, during some of the Nanga ceremonies, is well worthy of note. What does it mean? And why, both in Fiji and in Australia, is it resorted to as a means of expiation? We cannot for a moment believe that it is a mere licentious outbreak, without an underlying meaning and purpose. It is a part of a religious rite, and is supposed to be acceptable to the ancestors. But why should it be acceptable to them unless it were in accordance with their own practice in the far away past? There may be another solution of this difficult problem, but I confess myself unable to find any other which will cover all the corroborating facts.

Description of Plates I and II.

PLATE I.

View of the Nanga, or Sacred Stone Enclosure, of Wainimala, Fiji. From a sketch by Mr. Leslie J. Walker, Civil Service, Fiji.

PLATE II.

Sketch-Map of Na Viti Levu, showing the boundaries of the Nanga Districts. Drawn by Mr. J. P. Thomson, C.E., M.I.S., Government Surveyor, Fiji. The Nanga districts are shaded.

The following paper was read by the author:—

On the LANGUAGES of MELANESIA.

By the REV. R. H. CODRINGTON, M.A.

By *Melanesia* is here meant the chain of groups of islands of the West Pacific which stretch in a kind of curve from New Caledonia to New Guinea, west of Polynesia. The boundary eastwards is very well defined, Fiji being as plainly Melanesian as Tonga is Polynesian. New Guinea is not included in the present consideration, partly from want of knowledge of its languages, chiefly to keep away from the use of the term Papuan. I desire not to name the languages of Melanesia, with which I am acquainted, after a people or a country of whose languages I know very little.

The groups of the Melanesian Islands are—

1. New Caledonia, with the Loyalty Islands.
2. The New Hebrides.
3. The Banks' and Torres Islands.
4. Fiji.
5. Santa Cruz, and the Reef Islands.
6. The Solomon Islands.

My own acquaintance with the languages of these islands is limited, but it extends to each of these groups, and covers a good deal of the ground from the Loyalty Islands to Ysabel in the Solomons. Beyond that I have the valuable addition of the language of Duke of York Island, between New Britain and New Ireland, by the kindness of Mr. Brown.

From within the limits of Melanesia, as thus defined, certain places with their language have to be withdrawn from consideration. They are those in which the language is Polynesian, in fact Tongan; part of Three Hills, Futuna and Aniwa, Fila,

in the New Hebrides; Tikopia, some of the Reef Islands of Santa Cruz; Rennell Island and Bellona Island, south of the Solomon group, and Ongtong Java to the north. The presence of these distinct Polynesian outliers in Melanesia presents no difficulty, and is interesting. For the purpose of the present paper it is important to observe that the Melanesian languages in immediate proximity to these Polynesian settlements, show no more Polynesian character than those that lie far away. The language of Mae, in Three Hills, is in fact Tongan; that of Sesake, two miles off, is known to me, and certainly in my view is no more Polynesian than the languages of the Banks' Islands; which again are very much more like Fijian, than that is like Tongan, its very much nearer neighbour on the Polynesian border.

The object of the present paper is to set forth the view that the various tongues of Melanesia are homogeneous, belong to one common stock; and, secondly, that this stock is the same to which the other ocean languages belong: Malayan, Polynesian, the languages of the islands that connect Melanesia with the Indian Archipelago, and Malagasy.

The view which is opposed is one according to which the original Melanesian stock of language is distinct from that to which Malay and Polynesian belong; the theory according to which whatever in Melanesian languages is found common with Malayan and Polynesian is said to be introduced from, or due to influence from, either Polynesian or Malay, as the case may be.

I am very far from denying that words have been introduced, and language influenced, from the Polynesian or the Malayan side, though I do not think the modern Malay of commerce has reached Melanesia. What I believe is, that whatever has been introduced, from the one side or the other, into the Melanesian tongues, has been introduced not from a foreign but a kindred stock. I shall endeavour to give briefly my reasons for this belief.

The first view of the Melanesian languages, as a whole, shows a surprising assemblage of tongues differing so widely among themselves that within very short distances they become mutually unintelligible. In these are found, by those who are acquainted with Malay on the one hand, or Polynesian languages on the other, a number of words and forms which they recognise as familiar, and naturally take to have been introduced. It is not difficult to conceive how the Melanesian languages may have become so very different, if the present inhabitants are supposed to have arrived at their present seats at different times by various routes, and to have had little intercourse between them-

selves. But the differences in some cases are so very great that it is not easy at once to believe them all of one stock. Further acquaintance, however, diminishes the sense of difference; languages to the ear very unlike are seen on paper to be varying forms of the same. In this way, as the circle of acquaintance widens, languages are learnt more and more to be alike. Finally, in my own case, I may say that of the more than thirty Melanesian languages I have examined, there is not more than one (of which I know very little indeed) which still seems to me to stand much outside the groups into which the others have arranged themselves.

I may give as an example the language of Santa Cruz. Any Melanesian language seemed easy to Bishop Patteson, but he was never able, for lack of sufficient intercourse, to make acquaintance with that of Santa Cruz. Within the last few years it has become accessible; and though very strange at first, with a very different vocabulary, and with curious phonetic changes, it soon showed itself as familiar in its main structure, it arranged itself on the lines of the other Melanesian languages. The same has been the case with me in every Melanesian language I have become acquainted with. There are groups, as Fijian, Banks' Islands, the nearer and further Solomon Islands, which, differing among themselves, come on the whole near together. But some, till they are examined, seem strange and widely different, such as the Loyalty Island languages, Ambrym, Santa Cruz, Savo; and, when they are examined, show their family connection.

There is one characteristic of some of the Melanesian languages which again causes them to appear of a very distinct family. If any one, for example, should approach the Southern New Hebrides from New Zealand, he finds not only a vocabulary generally very different, but a very rugged consonantal form of words, strongly contrasting with the very vocalic Maori he has left. The difference, therefore, between Melanesian and Polynesian languages seems extreme. But when the whole Melanesian language field is surveyed, it is found that Fijian and the Solomon Island languages generally refuse to close a syllable, and that some of the Solomon Island languages are as vocalic as the Polynesian poorest in consonants. More than this, in a little district of the Banks' Islands there is one language, Motlav, which throws out every vowel it can; while its neighbour within three or four miles, Volow, substantially the same, is almost as vocalic as Fijian. It is impossible, therefore, to regard vocalic character as a mark of difference.

In the matter of vocabulary, the Melanesian languages are seen to have a great variety among themselves, and also to have

words plainly the same as those belonging to Malay or Polynesian. Are these words necessarily borrowed, or do they belong to the Melanesian speech?

By way of example I will take the words for "house" in Vanua Lava, an island fifteen miles long in the Banks group. There are four words belonging to different dialects, *govur*, *qekek*, *im*, and *eng*, at first sight all very different. Of these *qekek* is quite local, *govur* is rather more widely used; but *im* and *eng* are the same, and are forms of a very well known word, which in Malay is *rumah*.

This word in Melanesia, to begin at the furthest extremity, appears in the Loyalty Islands as *'ma*; in Anaiteum, *eom*; in Eromanga, *imo*; in Fate, *suma*; in Api, *uma*; in Northern New Hebrides, *ima*; in the Banks' Islands, *uma*, *ima*, *ema*, *im*, *em*, *eng*; in Santa Cruz, *ma*; in the Solomon Islands, *ruma*, *luma*, *nume*, *rima*, *nima*; in Duke of York Island, *ruma*.

Here are a considerable variety of Melanesian forms. There are corresponding forms to all these in the Malay Archipelago—*rumah*, Malay; *umah*, Javanese; *luma*, *lume*, *huma*, *um*, *om*, in various parts. What are we to suppose? That *ruma* in S. Cristoval has come from Malay, *uma* in Santa Maria from Java, *suma* in Fate from *huma* in Bouru, *lima* in Malanta from Tidore or Amboyna? Or, as it seems to me, that it was an original word belonging to a common stock, assuming various forms according to phonetic laws, and carried about here and there by the currents of population, which have streamed in distant or recent ages into the Melanesian and Indonesian Archipelagos alike?

In inquiring into the relationship of languages, one cannot refuse the aid of vocabularies. It is true that if one finds a word in two or more languages, that is no proof of relationship at all. It may be accidental, or one may have borrowed from the other. But one language *need* not have borrowed from the other. No one now says that, when the same word appears in Greek and Latin, the Latin has borrowed from the Greek. No one says we have borrowed the word "house" from the German.

So, also, a very great difference in the names of common things is no proof of difference of family of languages. A little vocabulary of most common words in two languages very closely akin may make them appear widely different. Take English and German for horse, dog, pig, woman, boy, girl.

Why, then, if the same word appears in Malay and Melanesia, must the Melanesian word be borrowed? Why, if names of some common things are different in this Melanesian and that Polynesian language, must the two languages needs be distinct? No one denies that the presence of common words in Greek and Latin, English and German, goes to prove a common origin. No

one doubts their common origin, because they differ so much in vocabulary.

Mr. Wallace, in his book on the Malay Archipelago, has collected vocabularies of 117 words in thirty-three languages of those islands. I have selected seventy of his words, and have obtained, more or less accurately, the equivalents in forty Melanesian languages. By this means one can compare Melanesian vocabularies, among themselves, and with those of that Archipelago. It is impossible to go into much detail here; but I must say that to my mind the comparison goes far to show the Melanesian languages homogeneous, and agreeing very much in vocabulary with the others. He has exceptional words, besides those which commonly agree, and so have I; and his exceptions occur often among my words, and my exceptions among his words.

I will give an example of the information which may be thus derived from the vocabularies. The word for "blood," in Malay, is *darah*. This has its representatives in varying forms through the Indian Archipelago, down to the extremity of Melanesia in the Loyalty Islands, where it appears as *dra*. The root is no doubt *ra*, which is reduplicated to *rara*, and *lala*. By assuming *d* to strengthen *r*, the word becomes *dra*, *dara*, *nara*, and so *dar*, *nar*, *tar*. By another change *ra* becomes *da* and *ta*. In Madagascar alone I find *ra*; the other forms are scattered irregularly from the Malay Peninsula to the Loyalty Islands. The same word thus, in varying forms but with the same meaning, is widely distributed alike in the Malayan and Melanesian regions.

But the Maori for "blood" is *toto*; which does not appear at all in Mr. Wallace's vocabularies, and only in one of mine. I happened, however, to find out that the disease *haematuria* is called *mimi toto* in one part of the Solomon Islands, and that congealed blood is called *toto* in another part of the same group. In the Banks' Islands, also, I have been long familiar with *toto* as the name of a poisoned arrow, smeared with the thick juice of a tree which is called *toto* because of the abundance of *totoai* (sap) in it. In Fiji, also, *dotoa* is a word for the sap, which is the blood, of trees. The root idea in the word is evidently one equally belonging to blood and sap. If any one should think that *dra* or *nara* has been introduced to the Banks' Islands from Malay, meaning blood, it is impossible to think that Polynesian influence should have made their word for blood received in those islands for the sap of trees.

Examples of this kind could be multiplied. When the word, in whatever form, varies its meaning in different places, still representing the original idea, the evidence of common kindred

is more complete. Thus *langi* is "sky" in Fiji, Malay, Malagasy, Maori; "wind" in the Banks Islands; "rain" in the Solomon Islands. So words disused and forgotten in their primary meaning survive in a secondary. *Tasi* is no longer "salt" or "sea" in the Banks Islands, but they *tasig* their food with salt; the lake in Santa Maria is the *Tas*, like *Itasy* in Madagascar; and the weather side where the sea breaks is *tasmaur* (the live sea) in Mota, and *Taimoro* in Madagascar.

Thus also no one can doubt the identity of the Maori *whetu*, Banks' Islands *vitu*, Solomon Islands *veitugu*, Celebes *bituy*, Malay *bintang*, meaning "star." But in Dayak *betuch anuh* is the sun, the same word evidently with a different application. And this is similar to the use of *maso andro* for "sun" in Malagasy, while *masoe* is a star in the Banks Islands.

The mouth is *baba* in Sumatra, *vava* in Madagascar, *waha* in New Zealand, *wawa* in North New Hebrides, *wa* in Duke of York Islands. In the Banks' Islands the word appears only as a verb, *wawanga*, to open the mouth.

If *pana* is Sanscrit, the word in various forms has certainly reached Melanesia, both as "bow," and "arrow," and "shoot." But in the Malay Archipelago there is another word, which *pana* may be supposed to have superseded, in Amblaw, Gilolo, Amboyna, Ceram, viz.: *busu, pusi, husu*; and this is of course the common Melanesian word *usu, vusu, vucu*, of the Banks Islands, New Hebrides, and Fiji.

But much as I think we may learn from vocabulary, we may certainly use grammar with more security. Languages do borrow grammatical forms, but not, surely, so easily as words. Here, however, are two considerations that I think it very desirable to advance.

Languages which have no inflections necessarily have little grammar, comparatively; and what they have in some points can hardly fail to correspond. If, then, we find two languages which suffix a personal pronoun to make a possessive, we cannot argue from that alone that they belong to a common stock. But if, bringing in vocabulary, we find that they suffix the same form of pronoun, we are much more secure in claiming relationship.

Secondly, it will not do to take as a standard a late, simplified, or decayed form of language. It will not do to say, because you find in Greek characteristic forms which are not found in Italian, that those are elements of a foreign stock: it will not do to judge a language which claims to be Gothic by its likeness to English. Malay is the English of the farther East, knocked about and simplified in the course of its use as a common medium; the Polynesian languages are the "Italian of the

Pacific." You cannot, I say, pronounce anything found in Melanesia to be of a radically distinct stock, because it is not found in Samoan or Malay.

By way of grammatical example, I will take the suffixed pronoun just referred to, and the verb.

In all Melanesian languages that I am acquainted with, except one, the personal pronouns which are suffixed to give a possessive in Malay, as *ku, mu ña*, are employed, more or less, in one form or another.

The root of the first person suffixed is *k*, which becomes *nng*, and *ng*, and *g*. That of the second is *m*, which, passing through a modified and nasal *m*, becomes *ng*.

That of the third is *n*, which becomes *ñ* and *d*.

There shows in Melanesia, here and there, a disposition to vary in the use of the second person suffix: a variation which appears also in the kindred tongues.

The table here added will give a conspectus of the varying Melanesian forms, for comparison among themselves, and with three others.

	First.	Second.	Third.
Malay ..	ku	mu	ñña
Malagasy ..	ko	nao	ny
Maori ..	ku	u	na
Duke of York Island..	ng	ma	na
Solomon Islands—			
Bugotu ..	nnggu	mu	ñña
Florida ..	nnggu	mu	na
Ulawा ..	ku	mu	na
Malanta ..	ku	mu	ne
S. Cristóval..	gu	mu	na
Santa Cruz ..	ke, nge	mu	de
Nifilole ..	..	mu	..
Torres Islands ..	k	ma	na
Banks' Islands—			
Motlav ..	k	(m)	n
Volow ..	nng	(m)	n
V. Lava ..	k	m	n
Santa Maria ..	k	ng	n
Merlav ..	k	ng	na
Mota ..	k	ma	na
New Hebrides—			
Aurora ..	k	nga	na
Pentecost ..	nnggu	ma	na
Espirito Santo ..	ku	mu	na
Lepers' Island ..	nnggu	mu	na
Sesake ..	nnggu	ma	na
Anaiteum ..	k	m	n
Ambrym ..	ng	m	n
Loyalty Islands—			
Nengone ..	go	..	ne

It is evident from vocabularies that these suffixes are found as commonly in the Indian Archipelago as in Melanesia. But in the Polynesian languages they are only found in what are called possessive pronouns, and indeed are not commonly recognised as suffixed pronouns. In Melanesia the suffix is only made to a certain class of nouns according to strict rule, besides its use with the nouns of possession. Nowhere in Melanesia is this rule more strictly observed than in Fiji, on the very confines of the Polynesian languages, which not only, like the Malay, have not this rule, but suffix only to the possessive noun. But Melanesians, as soon as they begin to speak with foreigners, depart from their strict rule, and come down to the practice of Polynesians: a modern Fijian will say *noku liga*, "my hand," instead of *ligaqu*, as the N. Z. Maori will say, *noku ringa*, who knows no better. This is significant, that the Melanesian uses, in strict rule, a form which has gone out of common use in Malay, and only is found in one connection in Polynesia.

With regard to the verb, it is, so far as I know, the universal practice in Melanesia to employ a particle before a word which marks it in use as a verb. In some languages the use is more extended than in others, and the particles used vary very much; but I know of no language whatever in which the verbal particles are not used. In the Polynesian languages I believe, as in the Melanesian languages generally, as in Malagasy, these particles change to mark the tense. In Malay this is not so. This exception surely leaves a rule which binds the ocean languages together.

Again, the Melanesian verb has, wherever I know it, the characteristic of assuming a definite transitive termination; whether such as the *raka*, *taka*, *caka*, of Fiji, or the simpler consonant added, as when *tangi*, to weep, becomes *tangisi* almost anywhere in Melanesia.

This the Maori has not, though it is easy to recognise the same forms in their passive verbs, and verbal substantives. If, then, one is to be told that the Fijian has borrowed verbal particles from the Polynesian, whence has it borrowed its transitive terminations? If in the Solomon Islands they have borrowed transitive terminations from the Malayan side, whence have they got their verbal particles marking tense? It appears to me that the verb has its particles, and transitive terminations generally, in the oceanic family of languages at large; though this or that member of the family may lack this or that member of the verbal form.

Finally, if there be an original distinct stock of the languages of the natives of Melanesia, where are we to find it? Has it

wholly disappeared? This is surely extremely improbable; any such circumstances as might have brought it about seem to be inconceivable, in face of the fact that in Fiji, which is closest to Polynesia, the characteristics of Melanesian language are particularly strong.

I have already said of those Melanesian languages which seem exceptional, such as those of the Loyalty Islands, Ambrym, Santa Cruz, Savo, which look so different from many of the rest that they may well be thought to be representatives of an ancient and distinct stock, that when they are investigated they show the same grammatical structure as the rest. I at least find no distinct foreign forms presenting themselves.

If there were any such distinct elements, possibly we should expect to find them also in the Australian tongues. But whereas one who is acquainted with one or two Melanesian languages finds himself at home with the vocabularies and grammars of all the ocean languages, Melanesian, Polynesian, Indonesian, Malagasy, how very different is the case when from the hardest Melanesian language he transfers himself to an Australian! In no Australian vocabulary that I have seen have I recognised a Melanesian word; in nothing that I have seen of Australian grammar have I found my Melanesian experience at home.

The information I have received about the language of Erob, Murray Island in Torres Straits, shows grammatical forms quite strange to me as Melanesian, and apparently Australian. Of New Guinea languages my knowledge is very slight; that of Motu, at any rate, is Melanesian. I am quite ready to believe in Australian language-forms as well as kangaroos in New Guinea, and the islands close to Australia. But I am sure that from the Melanesian side one does not recognise Australian languages as akin.

The languages spoken in Polynesia and in the Indian Archipelago seem to me plainly akin to the Melanesian; whatever influences have worked, or are working, on Melanesia, from the one side or the other, I believe to be the influences of kindred languages on their own kin, not of foreign languages on those of a distinct stock. The words of Logan, applied to the influence of Asiatic languages on those of the Indian Archipelago, seem to me quite true if extended to Melanesia:—"The languages imported differed as did those of the natives, and the combinations formed in different places from the contact of the two families varied in the proportions of each which entered into them. But the structure of the native tongues had strong affinities among themselves, and predominated in all these new combinations."

DISCUSSION.

Dr. TYLOR pointed out that whereas philologists such as W. von Humboldt and H. C. and G. von der Gabelentz had dealt with the Melanesian languages on merely literary information, we now have a theory of their relations by one able to speak and write not one but many Melanesian dialects. A paper of similar title, and bearing Mr. Codrington's name, had already been read before the Anthropological Institute on November 22, 1881, but as this paper, though put into shape from Mr. Codrington's materials, was not actually written by him, and hardly embodied his mature conclusions, the Council had wisely delayed publication. Mr. Codrington had now revised his evidence and put his conclusions in a clearer light. The problem of the relation of such a language as the Fijian to the ordinary Polynesian dialects, such as Maori or Tongan, had long presented itself. He himself well remembered when a Fijian Grammar and Dictionary was given to him many years ago by the late Henry Christy, and it appeared to him, from the correspondence of numerals and of the remarkable causative prefix *vaka*, that Fijian was a Polynesian language. Further examination tended rather to countenance the view of the elder Gabelentz, that Fijian and other Melanesian languages were not closely connected with Polynesian, but that traces appeared of a deep-lying common source of both language groups. Notwithstanding the different judgment of the younger Gabelentz and of Meyer, this view seemed sound. But it was now absorbed in an altogether more definite theory worked out by Mr. Codrington, whose argument from common words, and especially from grammatical suffixes, &c., seemed to prove beyond doubt that the Melanesian and Polynesian languages are of one family, but the Melanesian preserved earlier and more perfect forms, the Polynesian being a group of much broken down and comparatively modern dialects spread recently by migrations. That great physical differences should exist between races speaking languages of one family was a state of things not unfamiliar within the Aryan language family, while even English was more and more spoken by people racially different in the extreme.

Professor KEANE remarked that Mr. Codrington's very able paper re-opened the whole question of the mutual relations of the dark and brown Polynesian races, which involved some of the most intricate problems in the whole range of anthropology. His general conclusion, certainly urged with force, and with great, almost wider, knowledge of the subject than perhaps was at the command of any other living writer, seemed at once to place anthropology and philology in the sharpest antagonism. It must be obvious that, if Mr. Codrington is correct in assuming the original unity of Malayo-Polynesian and Melanesian speech, all our conclusions regarding the relative value of physical and linguistic types will have to be reconsidered. Mr. Codrington avoids the difficulty by restricting himself to the linguistic and overlooking the physical

aspects of the question. But it is evident that no final conclusions can be arrived at unless all the factors bearing on the points at issue be duly considered. Perhaps the greatest obstacle to the progress of anthropological studies lies in these partial and one-sided surveys of ethnical domains, which should be examined as a whole, and not as if made up of independent elements. In nature nothing is independent of its surroundings, and in the extremely complex subject of ethnology no safe general deduction can be drawn from the independent study of its separate branches. Least of all can such deductions be accepted when, as in the present case, they involve a direct conflict between the several branches themselves. The anatomy, archaeology, and philology of a given division of mankind can point at opposite conclusions only when all the conditions of the problem fail to receive due attention. Hence, even if Mr. Codrington had established the primordial unity of Oceanic speech, it would be rash to argue for the primordial unity of the Oceanic races, in the face of the insuperable difficulties opposed to that conclusion by the consideration of their anatomical differences. These differences are too well known and universally admitted to be here dwelt upon, and for us the question is, How are they to be reconciled with the assumed uniformity of speech? No doubt Mr. Codrington admits great diversity between the strictly Melanesian and Malayo-Polynesian languages. But he argues that the diversity is not fundamental, and that it is more than balanced by the resemblances in vocabulary and structure, which are strong enough to justify the conclusion that all the Oceanic tongues derive from a common stock. So far this view is not novel, for it was put forward many years ago by the elder Von der Gabelentz, and for a time generally accepted on his authority. But it has since been practically given up both by the younger (George) Von der Gabelentz and by Dr. A. B. Meyer, who in their "Beiträge zur Kentniss der Melanesischen Mikronesischen und Papuanischen Sprachen" (Leipzig, 1882), recognise the presence of at least two organic linguistic elements, a Melanesian or Papuan, and a Malayo-Polynesian, in the Oceanic world. But Mr. Codrington not only revives the old theory in all its original crudity, but goes much further, and takes up the startling position that the common stock is not Malayo-Polynesian, as had been taken for granted, but Melanesian, which for our present purpose may be taken as roughly synonymous with Papuan. He argues that the most primitive and archaic forms of the common speech are found amongst the black Melanesians of Fiji, the Solomon, Santa Cruz, and New Hebrides groups, not amongst the brown Polynesians of the Eastern Pacific, or the yellow Malays of the Indian Ocean. So great are the difficulties presented by this view, that it may be fairly described as paradoxical, or at least untenable, unless supported by overwhelming arguments drawn from a comprehensive survey of the whole ground. As Mr. Codrington does not profess to survey the whole ground, expressly excluding the strictly Papuan languages of New Guinea, as well as all ethnical considerations, it might be sufficient for the present to

suspend our judgment and await further evidence before accepting a conclusion running counter to all our preconceived notions of the respective value and relations of physical and linguistic types. For his theory would require us either to assume that in this instance the Melanesian, that is, the lower and unaggressive race, had imposed its speech on the Malayo-Polynesian, that is, the higher and more enterprising races, or else that the assumed common linguistic stock has remained undifferentiated into distinct species throughout countless ages, during which the common ethnical stock has become differentiated into at least three well-marked physical types. Neither hypothesis seems credible. No conditions can well be conceived in which the confessedly inferior dark peoples of the Pacific and Indian Oceans could have everywhere forced their speech on the superior and enterprising lighter populations of those regions. The Melanesians are not, and apparently never were, navigators; whereas both the Malays and the Eastern Polynesians (Samoans, Tongans, Tahitians, &c.) rank amongst the most daring seafaring peoples on the globe. In open praus or frail outriggers they have at all times been accustomed to make voyages of days and weeks from island to island in that watery domain, thus gradually spreading their race and their speech round more than half the world, from Madagascar to Easter Island, from Hawaii to New Zealand. The Polynesian Tongans, we know from Mariner, were in the habit of organising regular warlike expeditions against the Melanesian Fijians some 300 miles distant. The same islanders were often visited by the still more remote Polynesian Samoans, and numerous Polynesian settlements came thus to be planted in Viti Levu, and the other large islands especially in the west of the Fiji Archipelago. The whole local history and traditions of Polynesia are made up of similar warlike or pacific migrations, in which the Polynesians are always the aggressive, the Melanesians the passive element. The same relative position is taken further west by the Malays and the dark Papuans and so-called "Alfuros" of the Eastern Archipelago. Hence it seems impossible to accept the first alternative, that the Melanesians and Papuans imposed their speech on the Malays and Polynesians. Still more difficult is the second alternative of a primeval linguistic stock common to the whole Oceanic domain, still everywhere persisting sufficiently to be recognised as one family group substantially the same, while the primeval race itself has become so profoundly modified that it can no longer be regarded as forming one physical group. That language diverges from its prototype more rapidly than does the human organism, is almost a self-evident proposition, and may be taken as universally accepted by anthropologists. Hence, even supposing that the primitive Oceanic stock started with a common speech, this speech could not possibly have remained fundamentally one, while the stock itself became differentiated into the Papuan, Malay, and Polynesian types. Feeling the full force of this argument, the authors of the already quoted "Beiträge" cogently remark: "Gesetzt noch einmal der Erweis

der Sprachverwandschaft würde voll erbracht, so ergäbe sich unmittelbar ein Widerspruch zwischen Anthropologie und Linguistik. Zwei Sprachsippen sind verwandt; von den Völkergruppen welchen sie zugehören, zählt die eine zu dieser die andere zu jener Menschenraße. Wie ist das möglich?"

Before admitting the possibility of such a "Widerspruch" it will be well to suspend our judgment, at all events until the whole field has been thoroughly surveyed. Meantime it may be confidently anticipated that the results of such a survey will not tend to confirm Mr. Codrington's conclusions. Almost enough is, in fact, already known to warrant their rejection. The Mafoor, and other true Papuan languages not studied by Mr. Codrington, present a surprising individuality, a phonetic system, and principles of inner structure essentially different from those of the Malayo-Polynesian group. While the latter are almost flexionless, showing little trace even of agglutination, the former have developed a system of internal root modification and a highly intricate order of agglutination, which Meyer and Von der Gabelentz describe as of a "quasi-flexional" character. In general, the so-called "Papuan" or "Melanesian" languages dealt with by Mr. Codrington will probably prove to be mainly Polynesian or Malayan languages imposed on or adopted by Papuan and Melanesian peoples. The more we know of the true Papuan forms of speech, the more they will be found to diverge from the Malayo-Polynesian linguistic type.

Mr. JOHNSTON, Mr. A. TYLOR, and Mr. BOUVERIE-PUSEY also joined in the discussion.

Mr. CODRINGTON replied that, with regard to Polynesian influence on the Melanesian languages, it was impossible that the fuller and more complex forms of, for example, the Fiji verb, could have been learnt from the Polynesians, whose language is evidently a late and simplified form. The Motu of New Guinea, said to be Polynesian, is not so, for its vocabulary shows grammatical forms not known in Polynesia. It is a Melanesian language as much as any language of the Solomon Islands. The extraordinary similarity of all the Polynesian languages shows them lately distributed into their present seats. The diversity of words in Fiji with the same signification, remarked on by Mr. Johnston, could be explained there, or elsewhere in Melanesia, by separate and various settlements having little intercourse, or by the substitution of new words which for various reasons it had become in the native view improper to employ.

MARCH 11TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From the UNITED STATES GEOLOGICAL SURVEY.—Bulletin, No. 1. Second Annual Report, 1880-81. Monograph No. 2. Tertiary History of the Grand Cañon District, with Atlas.
- From the UNITED STATES GEOLOGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES.—Twelfth Annual Report, 1878. Survey of the Territories of Wyoming and Idaho. 2 volumes, with Maps and Panoramas.
- From the GERMAN ANTHROPOLOGICAL SOCIETY.—Correspondenz-Blatt. 1884, No. 3.
- From the ACADEMY.—Atti della R. Accademia dei Lincei. Vol. VIII, Fas. V.
- From the ASSOCIATION.—Journal of the East India Association. Vol. XVI, No. 2.
- From the INSTITUTION.—Journal of the Royal Institution of Cornwall. Vol. VIII, Part I.
- From the SOCIETY.—Journal of the Asiatic Society of Bengal. Vol. LII, Part I, Nos. 3, 4.
- Proceedings of the Royal Geographical Society. March, 1884.
- Mittheilungen der Anthropologischen Gesellschaft in Wien. XIII Band., Heft. 3, 4.
- Transactions of the Society of Biblical Archæology. Vol. VIII, Parts 1, 2.
- Bulletin de la Société d'Anthropologie de Bruxelles. Tom. II, Fas. 1, 2.
- From the EDITOR.—“Nature.” Nos. 748, 749.
- “Psyche.” March, 1884.
- Revue Politique et Littéraire. Tom. XXXIII, No. 10.
- Revue Scientifique. Tom. XXXIII, Nos. 9, 10.
- “Science.” Nos. 55, 56.
- The Science Monthly. No. 5.

The election of W. AYSHFORD SANFORD, Esq., was announced.

Mr. W. J. KNOWLES read a paper “On the Antiquity of Man in Ireland,” which was followed by a discussion in which the PRESIDENT, Mr. LEWIS, Mr. PARK HARRISON, Mr. ATKINSON, Mr. RUDLER, and Dr. GARSON took part.

The following paper was read by the author:—

*On the "LONGSTONE" and other PREHISTORIC REMAINS in the
ISLE OF WIGHT.*

By A. L. LEWIS, F.C.A., M.A.I.

THE Isle of Wight, the Roman remains in which have been recently described by our colleagues, Mr. F. G. H. Price, F.S.A., and Mr. J. E. Price, F.S.A., is not destitute of remains of an earlier period. Some of these, indeed, have been explored and described in our "Journal" by the gentlemen already named, but they were in the eastern half of the island,¹ whereas those to which I propose to draw your attention to-night are in its western half.

On the downs above Mottistone (a place on the high road to and five miles east of Freshwater) is a single upright stone called the "Longstone." It is about 13 feet high, 5 to 7 feet broad, and 4 feet thick; and 4 feet north-east from it lies a flat stone, 9 feet long, 4 feet broad, and 2 or more feet thick. These stones have been thought to be the remains of a dolmen, or cromlech, but I see no reason to suppose that any other stones were ever there, and I think that we still have the whole monument as it was originally designed, unless indeed the flat stone may have been shifted; the upright stone is too high to have been a supporter of a dolmen, and the flat stone is not long enough to have matched the upright one if set on end itself. Father Smiddy speaks of upright stones with flat stones by them, in Ireland, as having been judgment-seats of the Druids, but what his authority for that statement is I do not know. To the east of the "Longstone" is a fine tumulus, marked on the ordnance map as "Black Barrow," and to the north-east is a cleft in the Downs; the flat stone may have served as an altar on which the sun might shine through this cleft at its rising, or it may have been a judgment-seat, as Father Smiddy suggests, or the two stones may be simply a memorial, with or without interment. Colonel Godwin-Austen says of the stones erected by the Khasias (India) that upright stones represent the male element, and flat stones in front of them the female element.²

A sandy lane leads from the high road up to these stones, and, in the channel formed by rain in the middle of this lane, I found a good core, a flint stone chipped all round and possibly used as a hammer, and two other fragments of worked flint.

¹ "Journ. Anthropol. Inst.", vol. xii (1882), p. 192.

² *Ibid.*, vol. i (1871), p. 122.

Between two and three miles east-north-east from these stones, in the valleys between Galliberry, Idlecombe, New barn, and Rowborough Downs, are various earthworks, which are marked on the ordnance maps as "British villages." Our friend Mr. Flinders Petrie, who had previously visited and measured some of these works, hearing that I was in their vicinity, drew my special attention to them, saying that he believed them to be not villages but cattle-drives or game-traps; and, having examined them carefully, I think there can be no doubt that he is quite right. They consist of a series of banks running across the narrow deep valleys, and even partly up the hills on each side, so as to prevent their being turned, each bank having about the middle of its lower side a pit; one of these pits is more than 40 feet in diameter, which is too large for a pit dwelling. Three of these valleys converge towards one near Calbourne, where there is a rectangular double earthwork nearly obliterated, which, if of the same date, may have served as a pound in which to keep any animals taken alive; it seems too slight and too much commanded from the hills to have been a defensive work. What kind of animals, and in what numbers, must have existed to make it worth while to construct such works for their capture I do not know; but I suppose the system was for all the able-bodied inhabitants, canine as well as human, to turn out at intervals, and, having formed a cordon round a great part of the country, to drive all that it contained towards the select slaughterers concealed in the pits or behind the banks—a plan which, with some variations, used to be adopted by the natives of Australia.

On the high ground between Brixton and Cheverton Downs there is, however, a circular bank of a different description, about 6 feet high inside and 80 feet in diameter, without any ditch, but constructed with the earth taken from inside it, and this probably enclosed a few huts. I found no pits inside it, but the dwellings (if any) might not have been of the pit description. Although close by the trackway it is not seen till it is nearly reached, and there are tumuli very near it; at the foot of one about half-a-mile off, I picked up a worked flint which may have served as a fish-hook. This earthwork is about a mile and a half due east from the "Longstone."

The other fragments of worked flint exhibited were picked up on the surface in various parts of the neighbourhood. The bottom of a vessel, apparently Romano-British, I picked up on sloping ground above Puckaster Cove, Niton. Black says landslips have exposed Romano-British pottery at Barnes, which is about six miles along the coast to the west, and this piece has probably been turned out in the same way. I could not

find any more, though I made some search; but even this may not be altogether valueless, as some antiquaries have endeavoured to identify Puckaster Cove with the Roman Portus Castrensis.

The following paper was read by the Director:—

On the CROMLECH (Stone Circle) of ER-LANIC.

By Rear-Admiral F. S. TREMLETT, F.G.S.

[WITH PLATE III.]

THE island of *Er-Lanic* ("the little *Lande*"), which is also known by the name of *Innis Tessier* ("the Weavers' Island"), is small and uninhabited, and is situated among the rocks and rapid currents of the Archipelego of the Gulf of the Morbihan. It has a superficial area of rather less than two acres, and is situated to the south of Gavr' Innis; to the west of the Island of La Jument; to the east of the Ile Lonque, and to the north of the headland of Pen Bé ("Point of the Tomb"), in Arzon.

It is rather a difficult matter to land on this small island, and in reality it is very rarely visited, it being both uncultivated and uninhabited. Even the fishermen know it only from the fact of its being situated in close proximity to a dangerous reef of rocks, the Tisserands ("weavers"), which they avoid. If they ever land there, it is simply to cut down and bring away a few ferns; but of these rare visitors very few have ever given themselves the trouble of walking round this insignificant island; this is why the remarkable megalithic monument which is situated on it remained so long undiscovered.

From the height of the remarkable tumulus on Gavr' Innis, Dr. de Closmadeuc, President of the Société Polymathique du Morbihan at Vannes, who has become its proprietor, observed what appeared to him to be a group of menhirs on this small island, which decided him to go over to it in his boat at low water. On landing, he was not long in discovering amongst the gorse and genet which grow so abundantly there, that he had before him one of those early monuments which are so rare, and so little known in Brittany, namely, a megalithic *Cromlech*, or circle of stones.

On the centre of this island there is a natural rocky eminence, to the south-east of which, and distant from it about 25 yards, and situated on that part which slopes towards Arzon, will be seen a cromlech (circle) which is continued down to the beach; it is composed of 60 menhirs, forming a circle of about 200 yards

in circumference; its diameter from east to west is about 65 yards, that from north to south is 58 yards. Some few of the menhirs composing this circle remain still upright, but the greater number of them have fallen, and lie concealed by the long grass and gorse bushes. The distance between them is so inconsiderable that they nearly touch each other; in fact, in some parts they somewhat resemble the flat tombstones of a cemetery. Only four of the menhirs remain upright: these are to be found on the north-western side of the circle; their medium height is about 10 feet, but one of the fallen ones is really colossal: it is broken in halves, and it measures 18 feet long, having a thickness of 6 feet.

A very singular fact is that only one-half of this circle is on the island, the other half being on the beach in consequence of the sea having encroached on the land on its south-western side. When the tide is up, this part of the monument is covered with water, and consequently the complete circle can only be seen at low water.

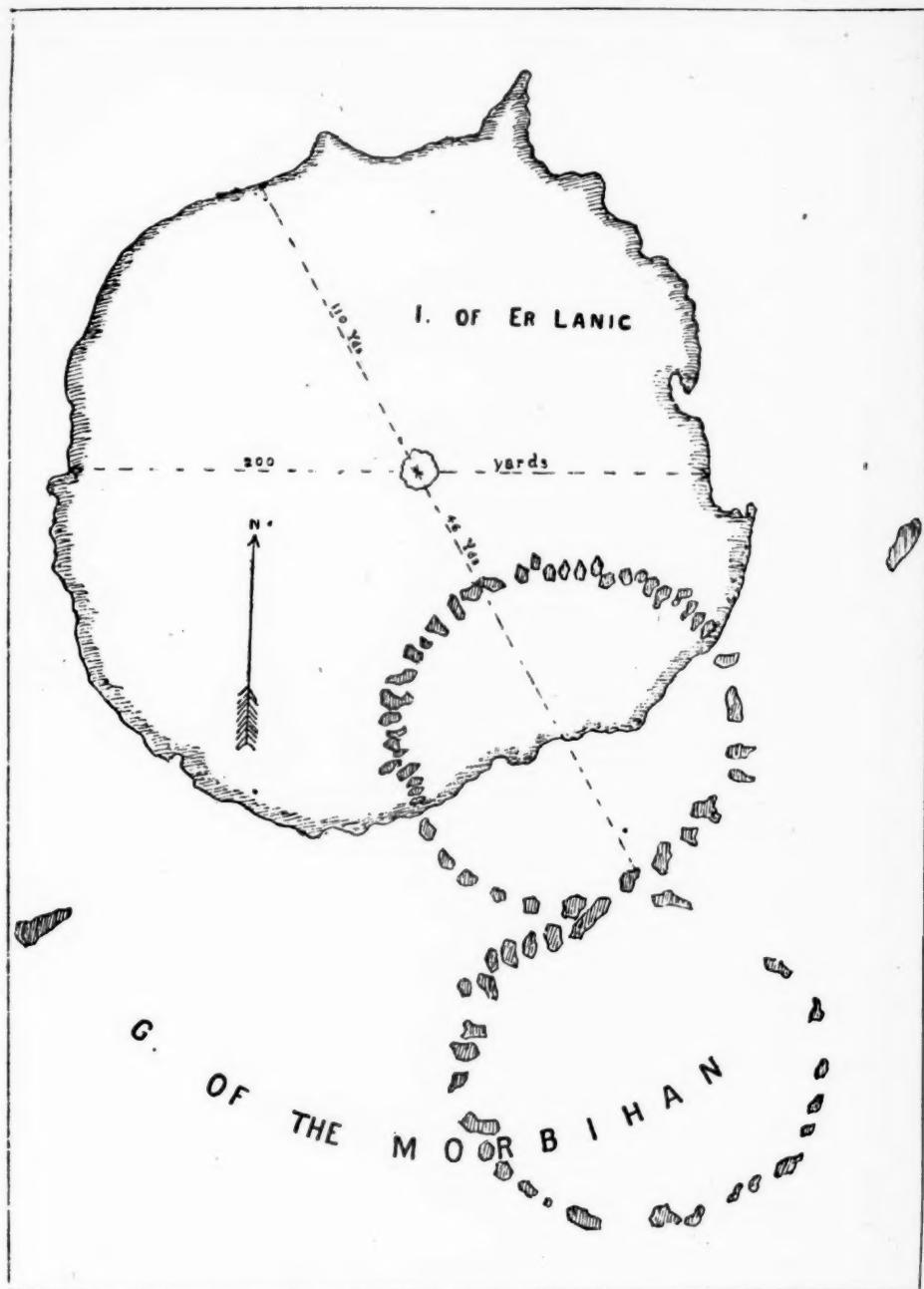
The discovery of this megalithic monument was first made by Dr. de Closmadeuc in 1866, but he frequently visited it afterwards for the purpose of studying it. On each visit he found within this cromlech a sufficient quantity of stone implements and shards of pottery to fill his baskets. These relics were of the following kinds:—

First. An enormous quantity of shards of pottery, which in form and paste resembles that which has been found in the Celtic monuments in Brittany. The paste of some of it was coarse and black, it having been mixed with grains of silex, and badly fired; some of it had been carefully made. Its surface was red, and it had on it the usual ornamentation resembling that found on some of the urns from the dolmens. Numerous samples of the pottery from Er-Lanic are now in the cases of the Archaeological Museum at St. Germains, near Paris.

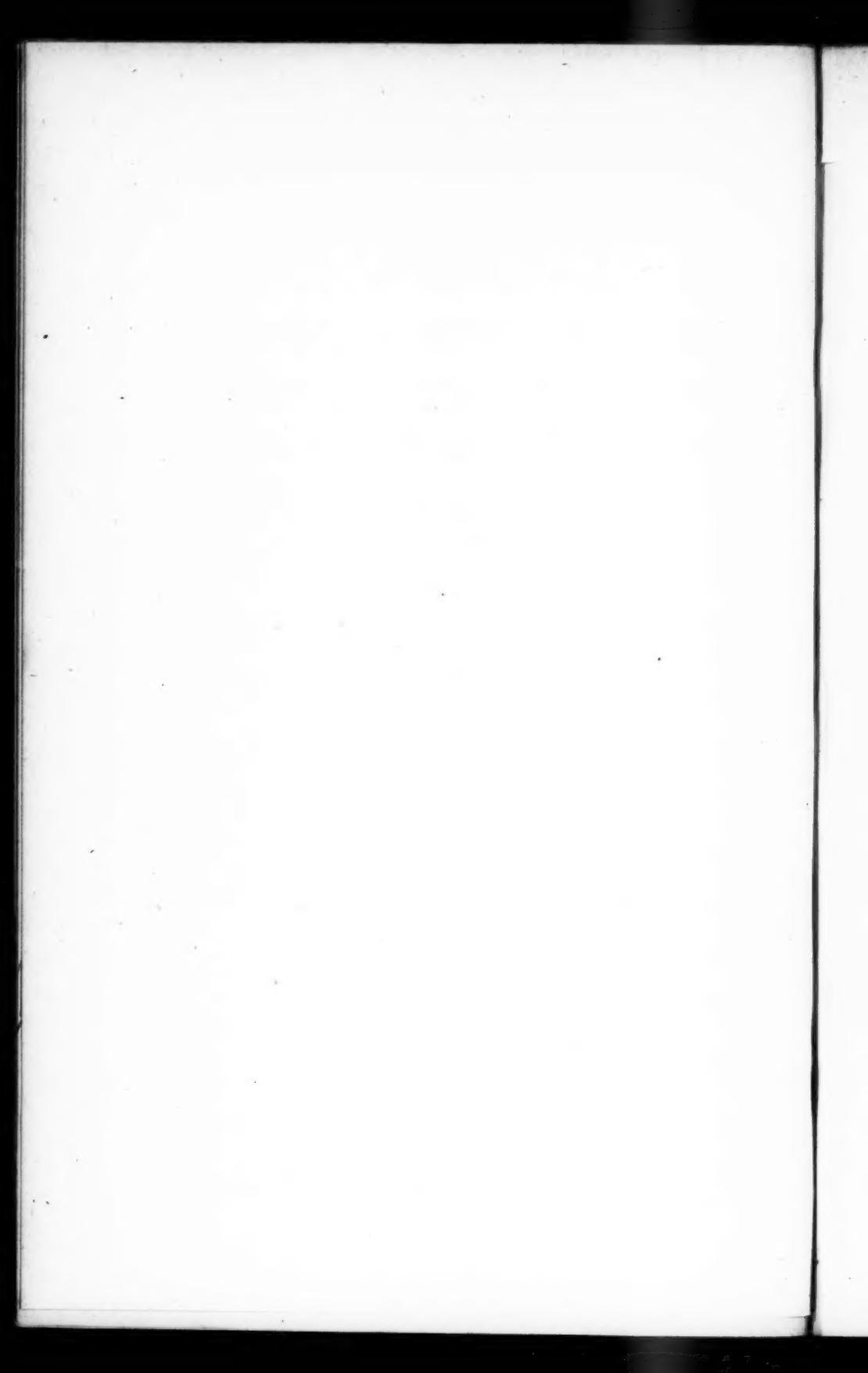
Secondly. A very considerable quantity of worked flint instruments, consisting of long knives (or flakes), their forms being prismatic, triangular, and quadrangular; scrapers and sharp-pointed flint chips, nuclei and circular stone hammers, &c. The objects in flint were found by thousands, but only two flint *arrow-heads* were discovered.

Thirdly. Hundreds of celts or stone axes, of every shape and of various dimensions, were also found here. The greater part of them were of diorite, a few were of quartz, agate and fibrolite, but nearly every one of them had been broken.

Fourthly. Stone mortars and granite querns, being of the same patterns as those which have been found in the dolmens of the Morbihan. One of the mortars had been hollowed out



MAP OF I. OF ER-LANIC, MORBIHAN, SHOWING STONE CIRCLES.



on two of the sides of the stone ; it showed evident signs of its having been in use for a long time, it being much worn.

Lastly. A great number of smooth water-worn pebbles, having a score cut out on their sides for attaching them, they having been evidently intended to serve as sinkers to fishing-nets, which system still exists to this day on the sea coast of the Morbihan.

In order to obtain these objects it was only necessary to remove the surface pebbles which had accumulated and had been deposited *within* the part of the cromlech on the beach. The part on the island was afterwards examined ; to do so it was merely necessary to clear away the surface stones and humus, beneath which there were found enormous quantities of broken celts, instruments of silex, and shards of pottery. Dr. de Closmadeuc frequently revisited this small island, accompanied by his workmen, bringing away with him on each occasion ample quantities of these remains ; indeed it is only requisite to follow with the eye the thin and superficial upper stratum of the island to be convinced that there exists below it literally a stratum of broken stone implements and shards of pottery, which stratum to this day has only been partially examined.

Dr. de Closmadeuc revisited Er-Lanic during the month of October, 1876, at the time of one of the *lowest* spring tides, and perceived very distinctly that beyond the cromlech (circle) which he had discovered (the whole of which was then visible), there existed a further circle attached at a tangent to the first one, it being also of about the same dimensions as the first one, seven or eight of its menhirs being on the beach ; the remainder, although submerged, had their upper part on a level with the water, being perfectly visible ; at its further extremity there is a colossal menhir, which then projected about 3 feet above the level of the water : it is this menhir which is marked on Beautemps Beaupré's chart of 1820 as being "a rock" to be avoided ; the fishermen to this day call it *Carec-er-go*, or the "Blacksmith's rock."

There exist, therefore, in reality, *two* cromlechs or circles here, which together resemble the figure of 8 (Plate III), one-half of the first circle being situated on the island, and the other half being covered at high water ; the second circle being under water at all times of the tide. Dr. de Closmadeuc further discovered at the same time that there are two enormous menhirs to the right and left of the double circles, which evidently belonged to the system ; they are always under water.

The submersion of these circles is probably due to the following causes :—Firstly, to a gradual subsidence of the land ; and secondly, to the erosions caused by the rivers of Auray, Vannes,

and Noyal, which empty themselves into the Morbihan, and carry away the softer strata, leaving the harder rocks which now form the islands of this inland sea; this process is still ever going on. The volume of the discharge of water, and the *scour* of the gulf, are such, that at times boats cannot stem its rapidity, and that, in fact, in some parts of it, after heavy rains, they become perfectly unmanageable. It is also a well-authenticated fact that the western coast of France has for a series of centuries been subsiding: the proofs of it are not wanting. In the bay of Audierne, when the weather is fine and the sea calm, the remains of ancient constructions can be plainly seen at a distance from the shore *beneath the waters*, which has given rise to many legends, especially that of the destruction of the city of Is. At Quiberon, the alignements of the menhirs of St. Pierre not only run down to the beach, but are continued under the sea water. Some of the menhirs are still standing upright below its level, and are distinctly visible at low water.

Description of Plate III.

Map of the Isle of Er-Lanic, in the Gulf of Morbihan, showing the position of the two stone circles, or cromlechs, and of the two submerged menhirs.

DISCUSSION.

Mr. LEWIS said it had been known for some time that this half-submerged circle existed, and the Rev. W. C. Lukis had mentioned it to the Society of Antiquaries, but he did not think so many details had been given about it before. The outlying stones were new to him, and were most important; for it was seen from the plan that they had a reference to four notable points of the compass, namely, a large stone to the north-east, another to the south-west, a rocky eminence to the north-west, and the submerged circle to the south-east or south. Those facts might be compared with those stated in his own paper on the "Relation of Stone Circles to Outlying Stones," &c., published in their *Journal* in November, 1882. In so far as these references were to the north-east, south-east, south-west, and north-west, rather than to the east, south, west, and north, they followed the Chaldean method of orientation, as opposed to the Egyptian, and this might some day be found to have some anthropological significance. The great quantities of broken stone axes and flakes and pottery found in and about the circles were also of great importance. Either the circles were set up on the site of an old implement factory or the flints and pottery were taken to and broken in the circles, which seemed to him the most likely. He could hardly suppose that so much pottery would be found amongst the *débris* of a flint factory; on the other hand, fragments of vessels, used and ap-

parently broken in some religious ceremony, were found in circles near the first cataract of the Nile (*Academy*, 18th November, 1876), in India (Forbes Leslie's "Early Races of Scotland"), and he believed nearer home also; but if the implements and pottery were brought to the circles and broken there it showed that the circles belonged to a much earlier period than Mr. Fergusson had assigned to our rude stone monuments. The submersion of the circles also indicated age, though Mr. Peacock had shown much ground for believing that great subsidences have taken place round the northern French coasts within the last two thousand years; and it was of interest in another way. It had been thought that as the stones on Gavr Inis were not native to that island they must have been floated over to it on rafts; but it would now seem that when the remarkable monument upon that island (which he had visited in 1867) was constructed the island might at some point have been connected with the mainland, though, indeed, water carriage might have been rather a help than a hindrance. The fact that the stones of the circles were still *in situ* suggested that their submersion was due to subsidence rather than to erosion.

The following paper was read by the Assistant-Secretary:—

On a PORTION of a HUMAN SKULL of supposed PALÆOLITHIC AGE from near BURY ST. EDMUNDS. By HENRY PRIGG, Esq.

[WITH PLATES IV, V, AND VI.]

THE fragment of human skull which I beg to submit to your notice (Plate V) was found in November, 1882, at a depth of $7\frac{1}{2}$ feet from the surface, in a pit then recently opened for brick-earth by the side of the high road from Bury St. Edmunds to Saxham, and in the parish of Westley.

It includes a triangular central portion of a frontal bone from a little above the *foramen cæcum*; about 5 inches of the coronal suture; and a little over 2 inches of the sagittal, with the anterior third of the left parietal, and a small portion of the right.

The sutures are closed internally, but not completely without. The bone is very slight, the two *tabulae* being separated by a very thin *diploe*. The thickest part of the fragment is only one-fourth of an inch.

The skull, judged from what remains of it, would appear to have belonged to an undersized, poorly-developed individual of middle age, probably of the female sex. The length of the frontal portion preserved is externally $3\frac{1}{2}$ inches, which in a normal skull would indicate that its lowest point would approach the upper margin of the glabella;¹ if so, I think it

¹ Position as assigned by the late Dr. J. Barnard Davis.

would be a sign that the anterior vault of the cranium was somewhat low.

It will be seen that the bone has suffered much decay, and when it reached my hands on the afternoon of its discovery, it was destitute of animal matter, and exceedingly friable.

Of the great antiquity of this fragment I think there can be little question. A glance at the section of the country (Plate VI, fig. 1) and of the pit (Plate VI, fig. 2) will show that the deposit of red loam in which it was found must have been formed long anterior to the complete excavation of the valley of the Linnet to the south, and at a time when at least flood-waters laden with much earthy matter flowed in some volume over what is now within a few feet of being the highest point of the country intervening between the valleys of the Linnet and the Lark. Unfortunately for the satisfactory demonstration of its high antiquity, the fragment was not taken from its matrix with my own hands; nevertheless I was early the next day at the pit, and most carefully examined the spot from which it came, assuring myself of two facts, namely—that there was no indication of a grave, or other disturbance of the deposit, and that no other bones remained therein in the neighbourhood of where the skull fragment had lain. The fact of the occurrence of the latter in the undisturbed loam-bed induced the intelligent labourer who directed the excavation to look upon it as something extraordinary, and to preserve it, and bring it to me.

The section exposed in the pit at the time of this visit was about 11 feet in depth, and a description of it will suffice for many of the other pits that have been worked in the same locality.

First, there is a surface-soil of from a foot to 18 inches. Then red loam somewhat sandy, in which is mingled, in some sections, chalky detritus of the nature of "cap," or, as it is called here, "dead loam," to a depth of 8 feet. Below this is a bed of compact brown loam¹ of varying thickness, clean above, but filled with large angular flint gravel towards its base, which generally reposes upon the chalk. The exception to this is, that in one or two places a bed of laminated argillaceous sand of some thickness underlies the loam and intervenes between it and the chalk. These deposits are of more or less limited extent, and are formed in pits or pockets, eroded in the old chalk surface, probably by the agency of water charged with carbonic acid. All over the fields hereabouts, except where the deposits of

¹ It is a question whether there is any real difference between the two loams in this case, but for convenience of description I have described them according to colour. It is probable that the subaerial waters percolating the surface subsequent to the deposition of the loam may have altered the character of the upper part of the bed by dissolving out of its chalky constituents.

loam occur, the chalk is found within a few feet of the surface, whilst in places on the slope of the valley of the Linnet it is exposed.

In the pit where the interesting discovery was made it was found that the loam deposit dipped under the roadway, and further working was abandoned, but elsewhere the men entirely clear out the pockets.

My attention was first drawn to the locality by the discovery in two of the pits of grinders of the mammoth (*Elephas primigenius*), and subsequently, in 1877, to the somewhat unlooked-for finding of a flint implement of archaic type in a pit in the same field as that in which the skull was found, but at a slightly lower level. (Pit No. 1 on section, fig. 1, Plate VI.)

This year another deposit has been opened up in pit No. 3, in which the loam-bed is worked to a depth of 18 feet from the surface, and from which I have already obtained three flint implements. One of these, with the implement first found, I have the honour to submit to the meeting (Plate IV). A section of this pit is given in Plate VI, fig. 3.

The first (Plate IV, fig. 1), referred to above as coming from pit No. 1, is a fine specimen of a "chopper" or "side scraper," $6\frac{1}{2}$ inches long, approaching in form those found at La Moustier. It is a heavy implement wrought with few blows to an edge and point, and upon its right-hand side is retained a considerable portion of cortical. It was found at a depth of 10 feet from surface, at the base of the brown loam. The site of its discovery was carefully re-examined by myself, in company with Dr. Evans and Professor McK. Hughes, in the spring of 1880.

The second implement (Plate IV, fig. 2) came from the deep pit No. 3 (Plate VI, fig. 3), in the adjacent field, but only a few yards to the westward from No. 1. It is an oval of $5\frac{1}{2}$ inches long, of the type most usually found in the gravel deposits of the Grindle and elsewhere in the valley of the Lark, and it occurred in the red loam at 7 feet from the surface. Previous to its entombment in the deposit, it had been much exposed to the weather, and is coated with a dense white *patina*, which in places has undergone subsequent decomposition.

The other implements found here occurred at a slightly lower level in a seam of stones, which in this instance separated the red from the brown beds. Like the first they have lain exposed upon the surface. In form the second resembles a rude scraper, whilst the last found is a small ovate implement.

I look with very considerable interest to the further development of this pit (No. 3), as it is situated only a few yards to the south of another deposit of a similar nature worked some thirty years ago, in which a labourer, who for many years worked

there, assured me that they found the entire skeleton of a man at about 8 feet from the surface, in solid brick earth, and near him the tusk of an elephant.

A few words, in conclusion, as to the position of this flint implement station. It is situated upon the broad tongue of land which intervenes between the valleys of the Lark and Linnet, and at about one-and-a-half miles from the junction of the latter rivulet with the former at the south end of Bury St. Edmunds. The height of the surface at pit No. 2 is ascertained to be 202 feet above the Ordnance datum, and about 100 feet above the level of the Lark at Fornham. The ground from the pits to the town rises slightly until the Cemetery is reached, when it falls to the valley of the Lark. Besides this slight rise to the east, and a corresponding one to the west, upon which the village of Westley is situated, no higher ground commands the station for over a mile.¹

For several years past, flint implements have been found in the valley deposits of the Lark at Bury, and at the entrance of the valley of the Linnet, but never at a higher level than 45 feet above the stream.

Description of Plates IV, V, and VI.

PLATE IV.

Fig. 1. Flint implement found in pit marked No. 1 in fig. 1, Plate VI.

Fig. 2. Flint implement found in pit marked No. 3 in fig. 1, Plate VI.

PLATE V.

Two views of a fragment of human skull found in November, 1882 in a brick-earth pit marked No. 2 in fig. 1, Plate VI, at a depth of $7\frac{1}{2}$ feet from the surface.

PLATE VI.

Fig. 1. Section from the Valley of the Linnet to that of the Lark. A, Valley of the Linnet; B indicates pit in which the skull was found; C, the pits which yielded the teeth of mammoth; D, that in which the flint implement, fig. 1, Plate VI, was found; E has yielded other flint implements; at F an elephant's tusk was found; G indicates the Newmarket Road; H, Tay Fen Valley, dry; J, the road to Fornham; and K the Valley of the Lark. Dotted lines at the base show a vertical scale of 1,000 feet and a horizontal scale for one mile.

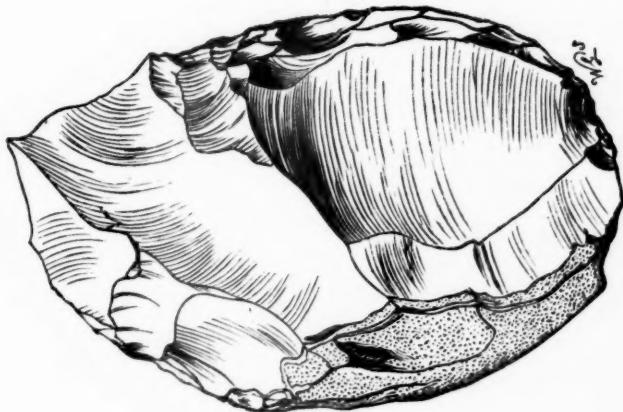
¹ It will thus be seen that a shallow trough is here formed across the ridge, which probably represents an old channel of the Linnet, which joined the valley of the Lark by way of the valley of Tay Fen, now waterless except in its lowest level.

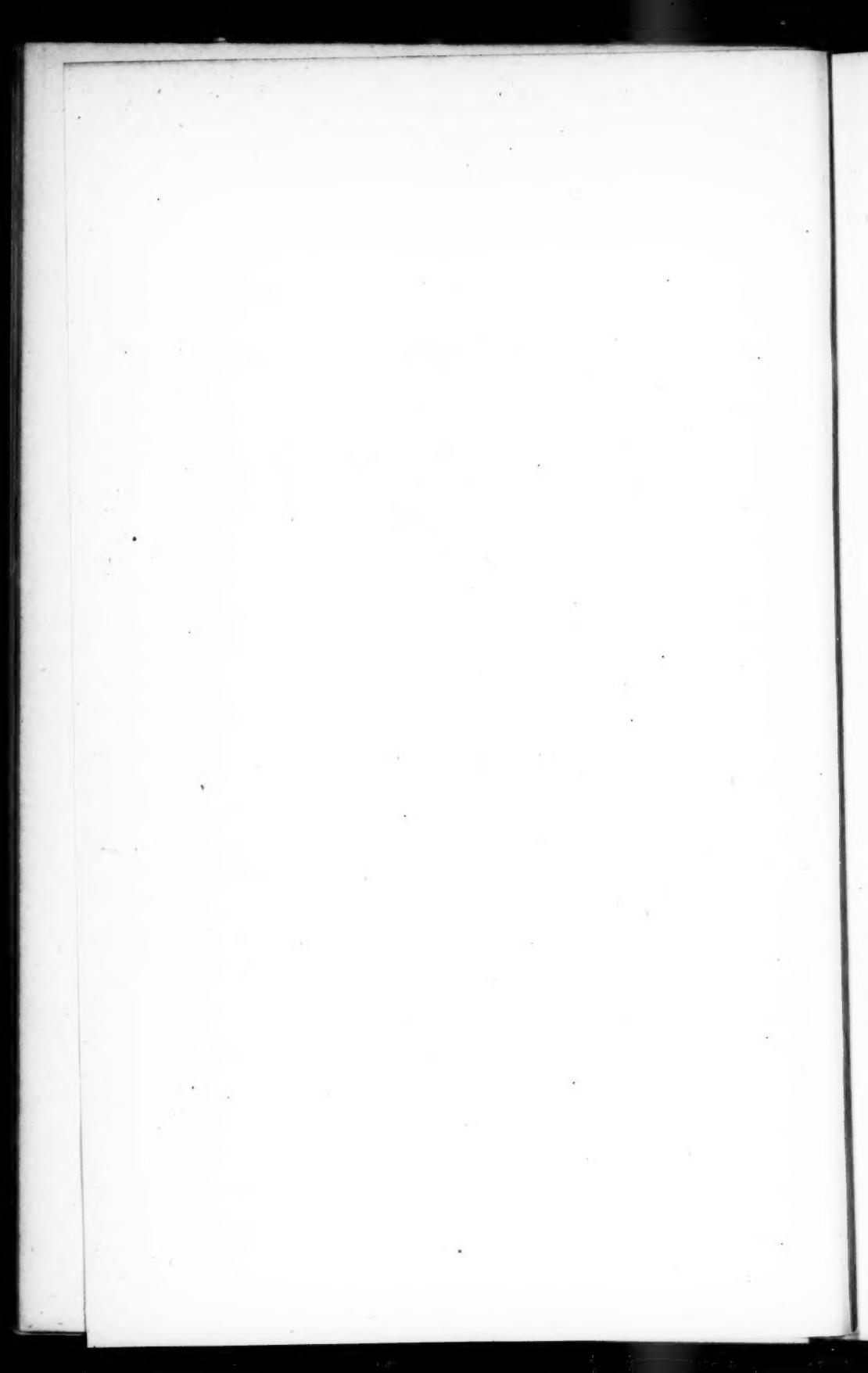
PALÆOLITHIC IMPLEMENTS FROM BURY ST. EDMUNDS.

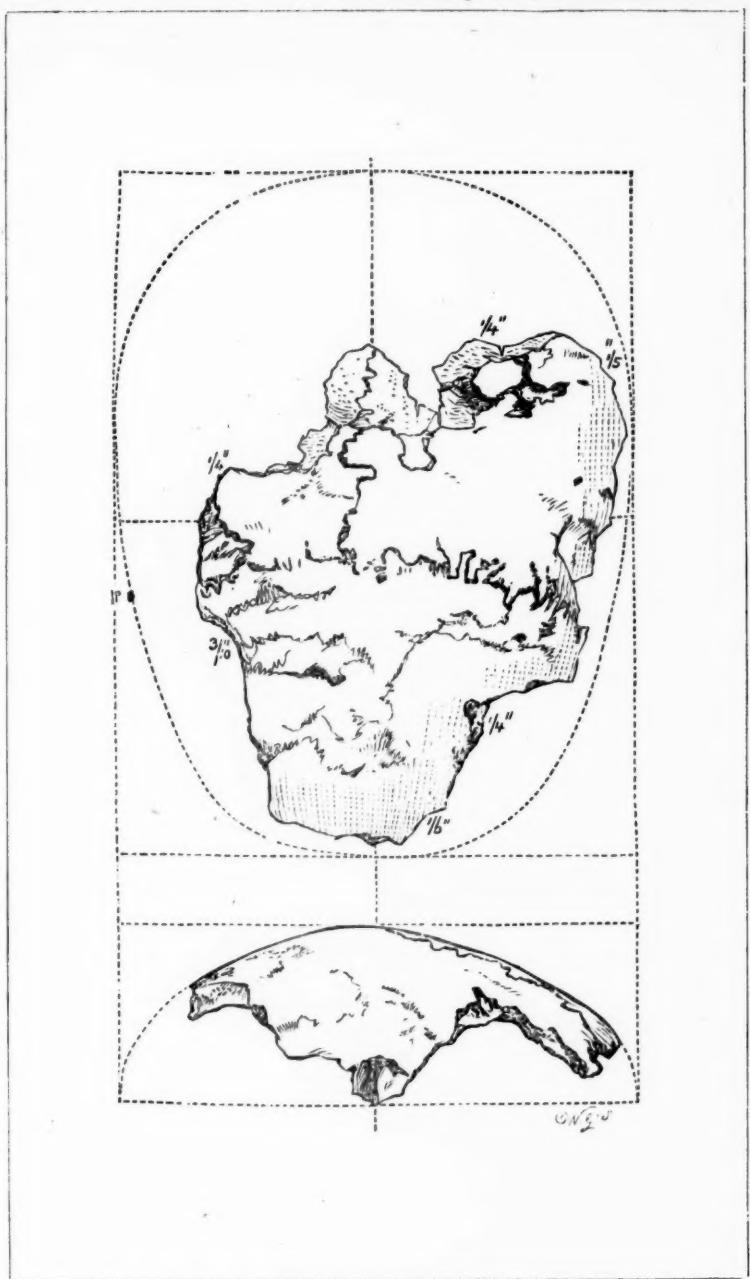
FIG. 2.



FIG. 1.







FRAGMENT OF HUMAN SKULL OF SUPPOSED PALEOLITHIC AGE, FOUND NEAR
BURY ST. EDMUNDS.

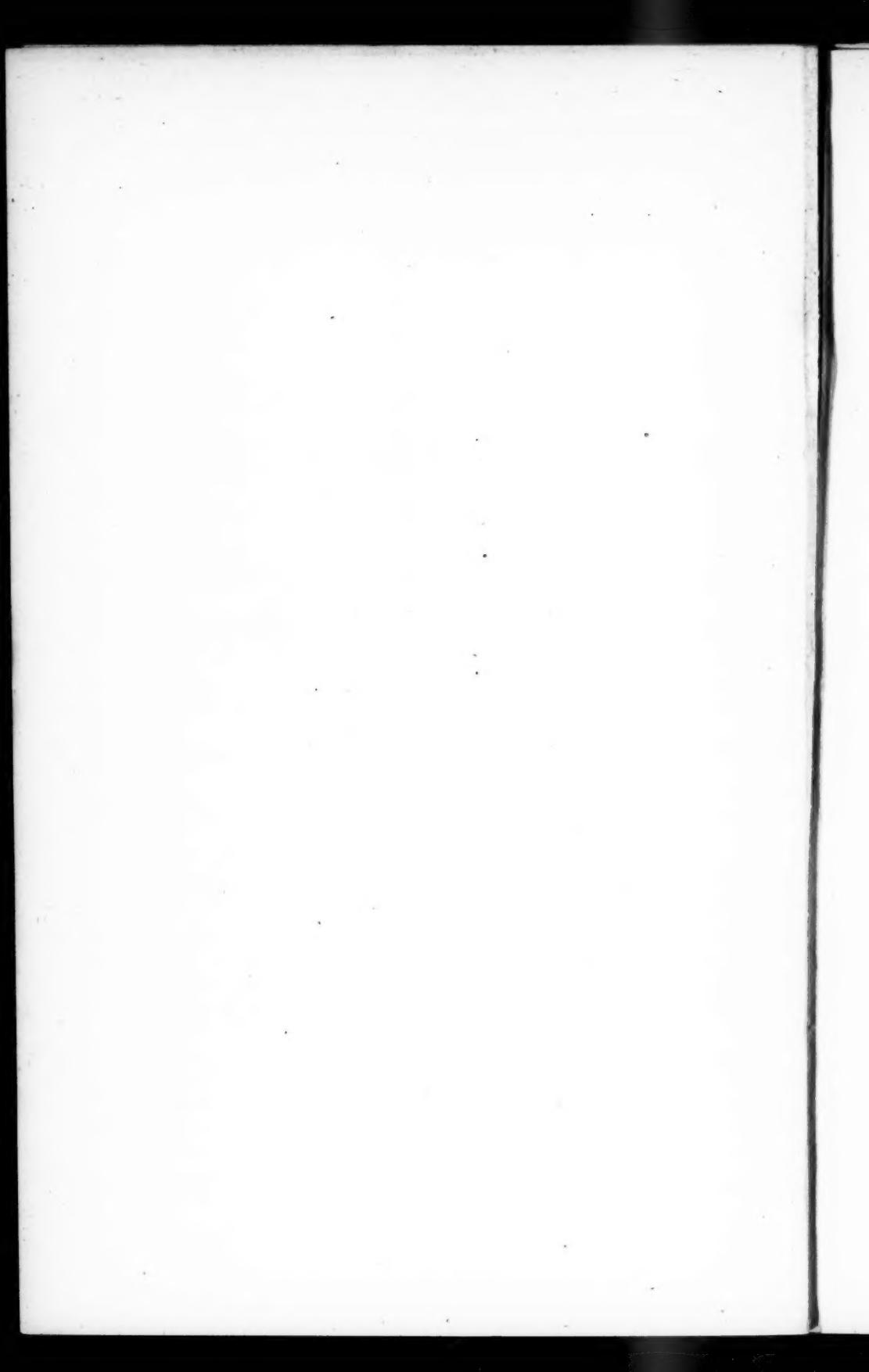


FIG. 1.

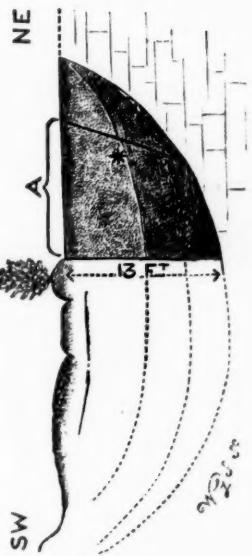
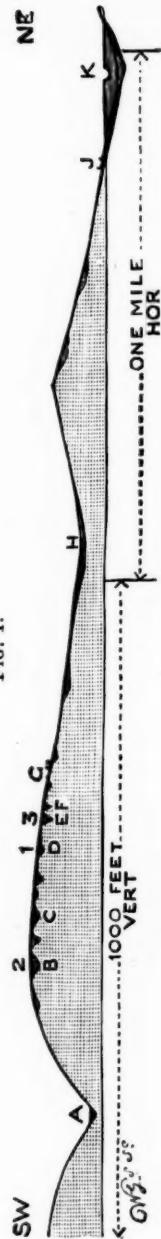


FIG. 2.

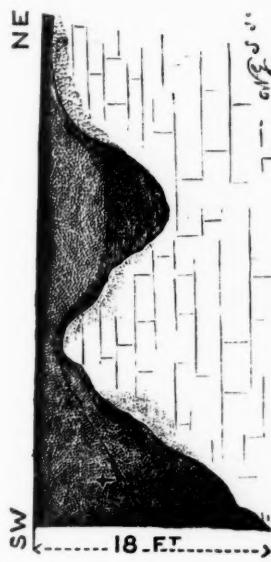


FIG. 3.

SECTIONS NEAR BURY ST. EDMUNDS SHOWING POSITION IN WHICH PALEOLITHIC IMPLEMENTS AND FRAGMENT OF HUMAN SKULL WERE FOUND.

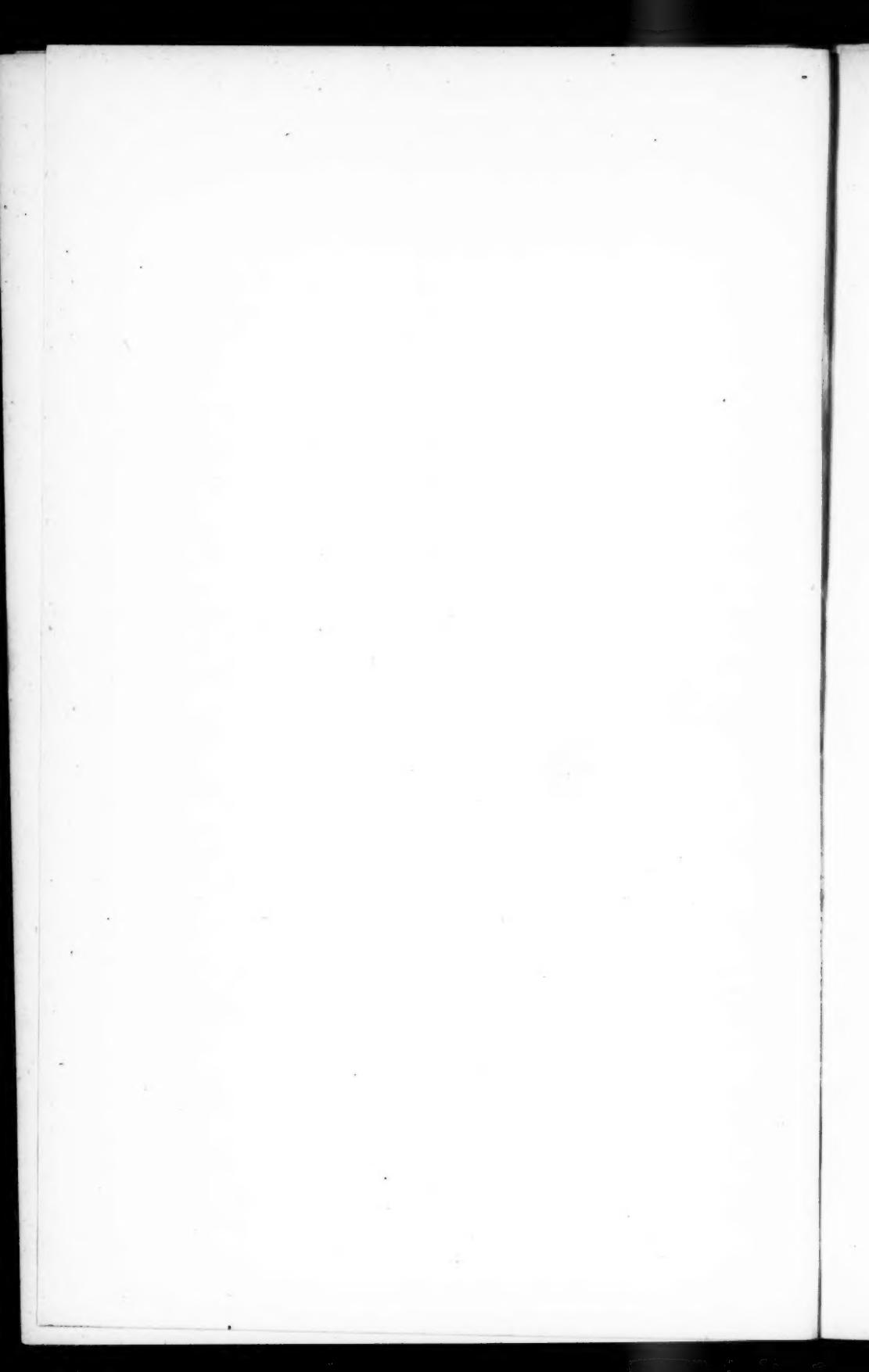


Fig. 2. Section of the pit No. 2 in fig. 1. A indicates the section exposed in the workings in November, 1882, and * shows the position of the human skull in the red bed.

Fig. 3. Section of the pit No. 3 in fig. 1, and of an adjacent pit; † indicates the position of the flint implement, Plate IV, fig. 2.

MARCH 25TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors.

FOR THE LIBRARY.

From the AUTHOR.—Abstract of an Account of Recent Archæological Excursions in Wisconsin and Ohio. By Frederick W. Putnam.

— Cimetière Gaulois de Mareuil-le-port. By M. le Baron J. de Baye.

From the ACADEMY.—Actas de la Academia Nacional de Ciencias en Cordoba. Tom. V, Ent. 1.

— Atti della R. Accademia dei Lincei. Transunti, Vol. VIII, Fas. 6.

From the SOCIETY.—Proceedings of the Literary and Philosophical Society of Liverpool. Vols. XXXV—XXXVII.

— Proceedings of the Royal Society, No. 229.

— Proceedings of the Society of Antiquaries of Scotland, 1882-3.

From the EDITOR.—The American Antiquarian, Vol. VI, No. 2.

— Bulletino di Paleontologia Italiana. Nos. 1, 2, 1884.

— Matériaux pour l'Histoire de l'Homme. March, 1884.

— "Nature." Nos. 750, 751.

— Panjab Notes and Queries. No. 5.

— Revue Politique et Littéraire. Tom. XXXIII, Nos. 11, 12.

— Revue Scientifique. Tom. XXXIII, Nos. 11, 12,

— "Science." Nos. 57, 58.

Lord WHARNCLIFFE exhibited a very fine stone implement recently found on his estate in the North Riding of Yorkshire, upon which Lieutenant-Colonel GODWIN-AUSTEN offered some remarks.

Mr. G. M. ATKINSON exhibited some flint flakes from Southend, upon which Mr. HILTON PRICE made some observations.

Mr. LAISHLEY exhibited and described a large collection of Maori heads carved in Cowrie gum. The PRESIDENT and Professor THANE joined in the discussion which this exhibition raised.

The following paper was read by the author:—

NOTES UPON SOME ANCIENT EGYPTIAN IMPLEMENTS.

By F. G. HILTON PRICE, F.S.A., F.G.S., Treasurer Anthropol. Inst.

[WITH PLATE VII.]

IT is not my intention to read a paper this evening upon Egyptian implements generally, but merely to describe a small number in my possession. To discuss the subject at length would occupy more time than I have at present at my disposal, and would perhaps be beyond the limits of our "Journal."

Until lately no implements of stone had been discovered in Egypt, but during the last few years records of important finds have been laid before our Institute by Sir Richard Owen, Captain Burton,¹ Sir John Lubbock,² Mr. Jukes-Browne,³ General Pitt Rivers,⁴ &c. It seems, therefore, most probable that Egypt at a remote period passed, like many other countries, through its stone age; but we have no information as to how long it lasted, or when it was superseded in that country by bronze and iron. I do not intend to imply that Egypt had ever been through such a stone age as had Denmark, but there is no doubt stone was used during the bronze period, and probably for many purposes during that of iron.

There is no record, on the monuments, of the ancient Egyptians making use of stone implements. Still, they had once used stone for ordinary purposes, and we find a survival of it for certain ceremonies lingering into the historic period. For instance, upon the authority of Herodotus and Diodorus, we learn that the embalmer used a knife made of the Ethiopic stone, which is described as being of exceeding hardness, and capable of taking a keen edge; and the man who made the first incision in the side of the corpse, for the purpose of extracting the intestines, had to run away with all speed even from his colleagues, as it was the custom for them to

¹ "Flint Flakes from Egypt," by Captain Burton ("Journ. Anthropol. Inst.", vol. vii, p. 323).

² "Notes on the Discovery of Flint Implements in Egypt," by Sir John Lubbock, Bart., F.R.S. ("Journ. Anthropol. Inst.", vol. iv, p. 215).

³ "On some Flint Implements from Egypt," by A. J. Jukes-Browne, F.G.S. ("Journ. Anthropol. Inst.", vol. vii, p. 396).

⁴ "On Discovery of Chert Implements in Stratified Gravel in the Nile Valley near Thebes," by Major-General Pitt Rivers, F.R.S. ("Journ. Anthropol. Inst.", vol. ii, p. 382).

throw stones at him and to load him with curses. M. Passalacqua discovered in a tomb close to a mummy a small box, which contained nine flint implements, presumably used for making incisions into the flanks of the dead.

Yet, notwithstanding they used flint for this purpose, at the same time they employed bronze, in the form of a long rod, with a hook at the end for extracting the brain, which was done by passing this instrument through the nostrils.

Then, again, another survival of the use of flint is shown by the knives for circumcision, which were employed for that purpose in Egypt as well as in Syria, being made of that material. They likewise used flints as points to their arrows for fowling purposes, and it has been supposed that they even used flint spears in warfare, though none have hitherto been found; and it is likewise probable that they made use of flint scrapers for preparing skins and dressing cloth. Flints were also used in some agricultural processes in ancient times: although I am unaware of the habit at the present day in Egypt, yet in many parts of the East they are still fixed into large wooden machines, which serve the purpose of the harrow.

I have frequently seen in Egyptian collections specimens of large flat and broad instruments of green basalt, usually being in the form of an animal (there is one of these in the British Museum), but for what particular purpose these weapons were used I am quite unable to say.

There is a good woodcut of flint knives in "The Ancient Egyptians," by Sir. G. Wilkinson, Vol. II, p. 261; the originals are in the Berlin Museum. One of them has a handle of flint, and is a well-finished implement. On the same page are the following remarks upon stone weapons by Dr. Birch, which I think worth adding, as he is our greatest authority upon anything relating to Ancient Egypt:—"A beautiful little stone saw was found by Prof. Hayter Lewis at the Pyramid of Zowet-el-Arian, built under one of the first six dynasties.

"The various stone knives in the museums of Europe are of pyromachous silex, of a light-brown, not dark, colour; and they were often deposited in baskets near the mummies, and fragments or slices of flint have been discovered in the tombs. Arrow-heads, resembling those of the stone period, have also been discovered in a tomb of the twenty-second dynasty, or the ninth century B.C., and other leaf-shaped pieces, apparently for the same use. Great quantities of flint instruments have also been found in the neighbourhood of Egyptian temples and stations in the peninsula of Sinai, in Arabia—amongst them stone hammers; knives of dark

steatite are also known, and the blade of a dagger of pyromachous silex."

The Turin Museum possesses a knife of similar form to that of Berlin, made of pyromachous flint; at Leyden there are three. Besides these are several other well-known flint knives of different forms in the various museums on the Continent and at the British Museum.

General Pitt Rivers¹ has a remarkable specimen of a flint knife found at Kom Ombos in 1874; it was probably used, as were the preceding ones, for embalming. It is 12 inches in length.

General Pitt Rivers considers it quite possible that the ancient Egyptians may have used flint or chert implements for cutting the figures and hieroglyphics in the sandstone used for the temples, and whilst he was at Koornéh he picked up a piece of the sandstone of which the temple is built, and in the course of half-an-hour cut out the head and shoulders of a man with a piece of flint; the advantage of such a tool being that it renews its own edges whilst in use. His discovery of flint implements *in situ* in the Nile Valley tends to prove that they are contemporaneous with the deposition of the gravel, and it goes far to upset the old theory of M. Chabas that there never was a stone age in Egypt.

Bronze is a metal which the ancient Egyptians largely manufactured into swords, daggers, javelins, spear-heads, arrow-heads, axes, adzes—indeed, all manner of cutting instruments were made of this metal, and it continued in use long after other nations had adopted iron or steel. There is a representation on a monument at Thebes, quoted by Sir G. Wilkinson, of a butcher sharpening his knife upon a steel, which is painted blue, in marked contrast to the red-coloured blades of the bronze implements.

Dr. Evans, however, considers the object coloured blue as more probably a whetstone than a steel.

In the British Museum there is exhibited a most interesting collection of carpenters' tools, mostly of bronze, found in a basket at Thebes: and figured in Wilkinson's "The Ancient Egyptians," Vol. I, p. 401; they consist of chisels, awls, drill bows, including the nut of wood belonging to it, for pressing against the chest as a protection to prevent the drill injuring the person using it. There was also found with them a vessel for holding the oil, made out of a cow's horn, a bronze saw, mallet, a bag of skin, supposed to have been used for holding nails, and a hone of stone for sharpening the implements.

Swords are of very rare occurrence, and few if any exist: the

¹ See "Journ. Anthropol. Inst." vol. ii, p. 386, with plate.

blades were long and curved ; there is a model of one in the Boulak Museum measuring 1·30 metres in length, and a few in Continental museums.

The *khopesh* is a kind of scimitar in bronze, and was used by the Egyptians and their allies the Etruscans.

As to the succession of the two metals, bronze and iron, among the ancient Egyptians, there is considerable diversity of opinion among those who have studied the subject. Sir Gardner Wilkinson, judging mainly from pictorial representations, thinks that the Egyptians of the early Pharaonic age were acquainted with the use of iron, and accounts for the extreme rarity of actual examples by the rapid decomposition of the metal in the nitrous soil of Egypt. M. Chabas, the author of a valuable and interesting work upon primitive history, mainly as exhibited by Egyptian monuments, believes that the people of Egypt were acquainted with the use of iron from the dawn of their historic period, and upwards of 3,000 years B.C. made use of it for all the purposes to which we now apply it, and even prescribed its oxide as a medicinal preparation. M. Mariette, on the contrary, whose personal exploration entitles his opinion to great weight, is of opinion that the early Egyptians never really made use of iron, and seems to think that from some mythological cause that metal was regarded as the bones of Typhon and was the object of a certain repugnance. M. Chabas himself thinks that iron was used with extreme reserve, and, so to speak, only in exceptional cases. This he considers to have been partly due to religious motives, and partly to the greater abundance of bronze, which the Egyptians well knew how to mix so as to give it a fine temper. From whatever cause, the discovery of iron or steel instruments among Egyptian antiquities is of extremely rare occurrence, and there are hardly any to which a date can be assigned with any approach to certainty. The most ancient appears to be a curved scimitar-like blade discovered by Belzoni beneath one of the sphinxes at Karnak, and now in the British Museum. Its date is about 600 B.C. A wedge of iron appears, however, to have been found between the stones of the Great Pyramid.

Herodotus mentions that when the Carians and Ionians landed in Egypt, in the seventh century B.C., they were armed with bronze weapons. An Egyptian went to apprise Psammetichus of the fact that brazen men had arisen from the sea and were wasting the country. It would appear from this that the Egyptians used iron at that period.

M. Devéria and M. Chabas both cite the discovery of an adze with an iron blade and a handle of bone or ivory. There is not much doubt that iron was rare in Egypt, in pre-Roman times.

There are two words known descriptive of iron, *ba en pe*, "heavenly metal," supposed to be meteoric iron; and *ba nu ta*, or "terrestrial metal," that found in the earth. They made use of haematite for various objects, such as beads, weights, figures, &c.

I shall now proceed to describe the implements I have already referred to as belonging mostly to my collection.

The first is a bronze axe of considerable interest, which was found at or near Beyrouth, together with three others, all of different sizes; they in all probability came from a tomb, as there are traces of bitumen and cloth still adhering to one or more of them, indicating they were interred with a mummy. The largest axe is now in the collection of the Rev. Canon Greenwell, F.R.S.; it measures 5½ inches in length, and 3½ inches across the blade. It is a fine specimen of the Egyptian war axe (Plate VII, fig. 7); a socket runs through the upper part, and it was hafted into a wooden staff, as is seen by the remains of wood still existing in the socket. A stout rib runs down the centre at right angles to the handle; upon either side of this rib are holes, each placed obliquely to the rib; round the lower margin of each of these holes is a slightly raised rib, designed, we presume, for extra strength, or for ornament. Upon the oxidized surface of this axe the impression of cloth can be distinctly seen.

A second but smaller one is in the collection of General Pitt Rivers, F.R.S., but I have not the dimensions by me. A third one is in my own collection, which measures 3½ inches in length, by 1⅔ and 1½ inches in width (Plate VII, fig. 10). It was hafted probably on a wooden handle, as was that belonging to Canon Greenwell. It has an elevated rib, at right angles to the socket, passing down the centre of the blade to its edge, which gives it greater strength; it has likewise two oviform holes, 1 inch in length, placed close up to the haft, upon either side of the rib. The fourth axe is much smaller in size, and is in the collection of Mr. T. W. U. Robinson, F.S.A., of Hardwick Hall, Durham.

Axe-heads were sometimes highly ornamented; for instance, there are two in the British Museum, one representing two bulls in the attitude of fighting, the figures being cut out of the bronze, and the other having a man on horseback. These axes were probably ceremonial, as they are too slender for use in war or otherwise. There is another of the same type of shape, bearing

the prenomen of  Thothmes III., who ascended the throne

about B.C. 1495. There is also in the British Museum a most interesting example of a war axe in bronze, of a long oval type, with two loops near the socket; its handle is of silver. This

example, though of much slighter make, is somewhat of the same type as that found near Beyrouth, now in the collection of Canon Greenwell.

The next implement I shall describe is an adze or hoe of bronze, which was found last year at Tel Basta, together with two others, and was probably used by carpenters for cutting wood. Dr. Birch¹ says that "the adze answered in Egypt all the purposes of the modern plane, a tool which the Egyptians had not invented. Different kinds of adzes were employed, according to requirements, one being adopted for trimming wood, another by boat-builders, and a third by bow and arrow makers. Some of the adzes had wooden handles, and others iron blades."

This specimen must have been hafted into a wooden handle, which was fastened in by one strong rivet, the holes for which can be seen upon the specimen now exhibited. There is another theory for the use of this implement—that it was a hoe for tilling the ground. There is in the British Museum an iron hoe from North-Eastern Africa, with a long wooden handle, of much the same form as fig. 9; and implements of similar form, but without any socket, have been found in Peru and Ecuador, but these have probably been employed for splitting wood, as they bear marks of having been hammered. They are also in the British Museum.

The usual Egyptian hoe, however, as is well known, was made of wood, the blade and handle being simply bound together with pieces of twisted thong.

The blade of my specimen is $4\frac{1}{4}$ inches in length, and its height is close upon 3 inches (see Plate VII, fig. 9).

In Sir Gardner Wilkinson's "The Ancient Egyptians," Vol. I, p. 232, is a woodcut of leather-cutters at work, and one of them is using an implement of the same form as this, but my specimen is, I think, too large for that purpose. There are several hoes of this form in the British Museum; they were in all probability used with a long wooden handle similar to those before cited from North-Eastern Africa.

I shall next describe the head of a small javelin or spear, two-edged. The length of the blade is $1\frac{3}{4}$ inches, the length of the tang is $1\frac{1}{2}$ inches, and the total length of the javelin-head is $3\frac{5}{8}$ inches; it was probably hafted into a wooden shaft, and used for throwing (see Plate VII, fig. 6). I have another, $1\frac{3}{4}$ inches long, with a longer barb than the former; they are both made of bronze, and were found at Tel Basta.

These javelin-heads are much of the same form as those in the British Museum, and those figured by Sir Gardner

¹ See footnote, Wilkinson's "The Ancient Egyptians," vol. ii, p. 196, new edition, by Dr. Birch.

Wilkinson in his "The Ancient Egyptians," Vol. I, pp. 209 and 278, who says of them that "the javelin is lighter and shorter than the spear, was also of wood, and similarly armed with a strong two-edged metal blade, generally of an elongated diamond shape, either flat, or increasing in thickness at the centre, and sometimes tapering to a very long point, and the upper extremity of its shaft terminated in a bronze knob, surmounted by a ball, to which were attached two thongs or tassels, intended both as an ornament and a counterpoise to the weight of its point." There were several varieties in form of these javelins. Dr. Birch considers that weapons of this type were probably employed for hunting the crocodile.

The next in order to describe are the arrow-heads of bronze, which are of frequent occurrence in different parts of Egypt, and they vary very much in form. Similar types are also found throughout Asia Minor, Syria, and Greece, and it is difficult to say to what nation they really belong; possibly the types I now exhibit were in use by all the nations of the East at the time. Mr. Franks has stated that this Egyptian form of arrow-head has even been found as far east as China. It has been supposed by some that these arrow-points are not of higher antiquity than the Greek period.

It is most probable that the specimens found in various parts of Egypt are of Asiatic origin, probably Scythian. In "Archæologia Æleana," Vol. I, page 201, is an account of certain arrow-heads of bronze, found near Mount Caucasus, and communicated to the late Rev. J. D. Carlyle by His Excellency M. Tomara, Ambassador for Russia at Constantinople.

It appears from this that in 1817 the author, Mr. Carlyle, was informed by the Russian Ambassador that there had been discovered on the large plain at the foot of Mount Caucasus such immense quantities of arrow-heads, made of copper, that for some years fourteen furnaces were employed at that time in melting them down. Mr. Carlyle was presented with a collection of them, some of which are figured on a plate in the before-named paper. Many of them are of the same type as those found in Egypt.

The following arrow-heads are now exhibited from my own collection:—

1. Bronze arrow-head, three-bladed, cylindrical body for fixing into the shaft; length, $1\frac{3}{4}$ inches; from Elephantine. This specimen is in a fine state of preservation (Plate VII, fig. 1).
2. Two others of similar form from Tel Basta.
3. Four others, of shorter, with broader blades, from Tel Basta; length, $1\frac{1}{4}$ inches.

4. One of narrower form ; length, $1\frac{1}{2}$ inches ; Tel Basta.
5. One similar form ; length, $1\frac{1}{4}$ inches ; Tel Basta.
6. One barbed form, deeply grooved between the blades ; length, $1\frac{3}{4}$ inches (Plate VII, fig. 3) ; Tel Basta.
7. Two triangular-shaped arrow-points, without cylindrical sockets (Plate VII, fig. 2) ; Tel Basta.
8. Another of similar form with cylindrical socket (Plate VII, fig. 4) ; Tel Basta.
9. Two-bladed arrow-head, with one barb on the cylindrical body. It is a remarkable fact that this form of arrow-head has frequently been met with in the Lake Dwellings of Switzerland (Plate VII, fig. 5).

Last December the British Museum acquired by purchase a most interesting mould, made of bronze, for casting such arrow-points, found near Mossul. It contains three compartments, and is formed to cast two three-bladed arrow-heads and one single-bladed arrow-head, with a barb on its shaft, of somewhat similar form to that I have already described as being found at Tel Basta.

Arrows complete, with the head affixed, whether they be of bronze, stone, or wood, are somewhat rare, and I have now to draw your attention to an interesting example of a reed arrow, which was found last year at Thebes, together with some others ; but I only succeeded in acquiring this specimen. It measures 21 inches in length, is tipped with a flat bronze arrow-head, secured to the shaft by being bound on with a piece of thong, covered over with some black composition. The reed is notched at the end ; the feathers, however, are wanting, but the position where the three feathers have been affixed is plainly visible. The reed is crushed in one part, and has been repaired by a piece of thong being bound round it.

The last object in bronze that I have to notice is the little razor of bronze (Plate VII, fig. 8). It is much in the form of a pair of scissors, and measures $2\frac{1}{2}$ inches in length, and $\frac{3}{4}$ inch across the blade. There is a similar one in the British Museum, which was found in a leather case, together with razors of a different form, and which Dr. Birch considers formed the stock-in-trade of an itinerant barber.

The flint flakes and saws from Helwân which I now exhibit are of similar type to those described in this room by Mr. A. J. Jukes-Browne, F.G.S., on 11th December, 1877. Therefore I shall not say much about them, further than this : two appear to have been intended as lance-heads, and may well compare with those figured by Mr. Jukes-Browne ("Journ. Anthropol. Inst.", Vol. VII, Plate IX, No. 1,) except that mine is slightly shorter,

64 J. G. GARSON.—*On the Frankfort Craniometric Agreement,*

the length being $2\frac{1}{2}$ inches. It is of a cherty sort of flint, and the edges on both sides are serrated.

Others are knife-shaped, some straight, and with edges chipped like a saw.

Description of Plate VII.

- Fig. 1. Arrow-head, in bronze, socketted ; from Elephantine.
" 2. Ditto ; from Tel Basta.
" 3. Ditto, with three ribs ; from Tel Basta.
" 4. Ditto ; Tel Basta.
" 5. Ditto, with one wing or barb ; from Tel Basta.
" 6. Javelin-head in bronze ; from Tel Basta.
" 7. Axe-head, in bronze ; from Beyrouth.
" 8. Razor, in bronze ; from Thebes.
" 9. Hoe, in bronze ; from Tel Basta.
" 10. Axe-head, in bronze ; from Beyrouth.

All the figures in this plate are drawn to one-half linear scale.

The following paper was then read by the author :—

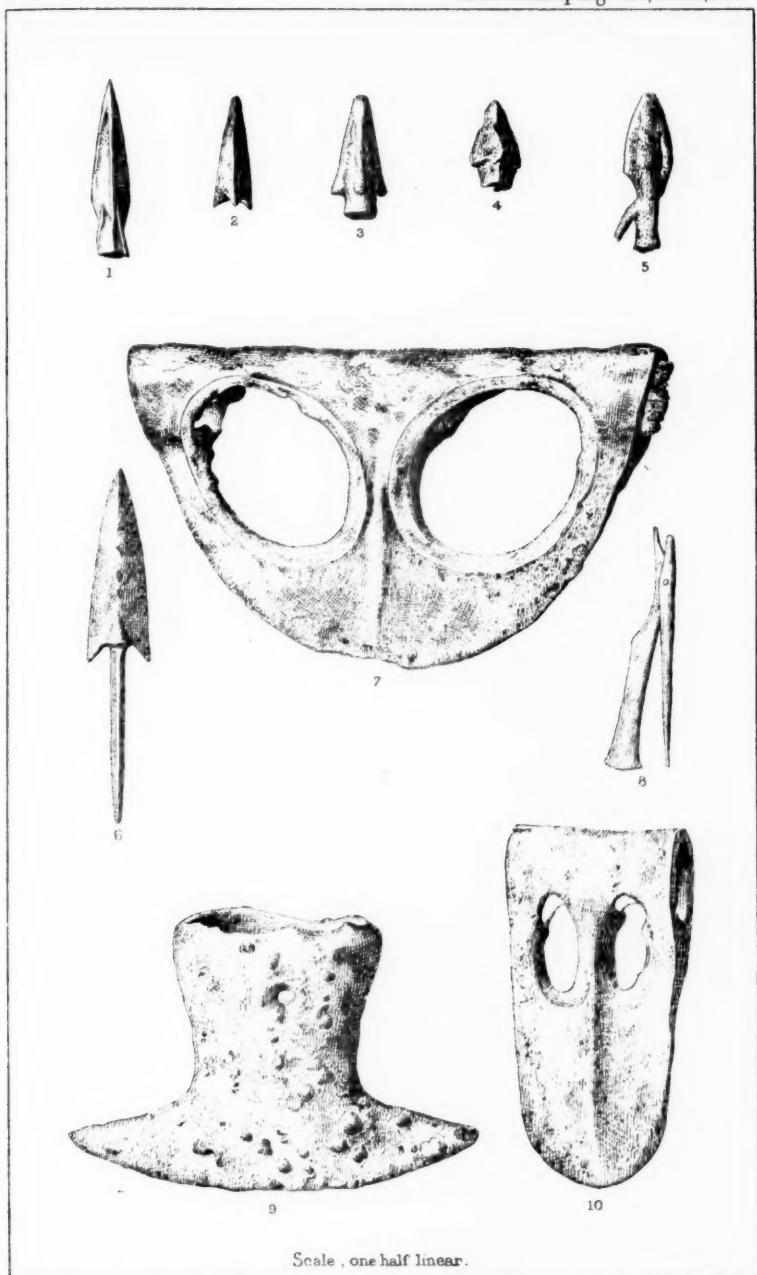
The FRANKFORT CRANIOMETRIC AGREEMENT, with CRITICAL REMARKS thereon. By J. G. GARSON, M.D., F.Z.S., Memb. Anthropol. Inst., Anat. Assist. Royal College of Surgeons, and Lecturer on Comparative Anatomy at Charing Cross Medical School.

[WITH PLATES VIII AND IX.]

FOR some time past anthropologists in Germany have been laudably endeavouring to come to a general agreement among themselves as to a method of measuring skulls which would be generally adopted. For this purpose a Craniometric Conference was held at Munich in 1877, and another in Berlin in 1880. The outcome of the deliberations of these conferences was a scheme drawn up by Professors Kollmann, Ranke, and Virchow, which was submitted for consideration to the 13th General Congress of the German Anthropological Society, held at Frankfort-on-Maine in 1882. The scheme was adopted and designated the "Frankfort Agreement," of which the following is a more or less literal translation.

The Horizontal Plane of the Skull.

The German horizontal plane, as accepted by the Craniometric Conferences held at Munich and Berlin, is defined as follows :— "That plane which is determined by two straight lines (one on

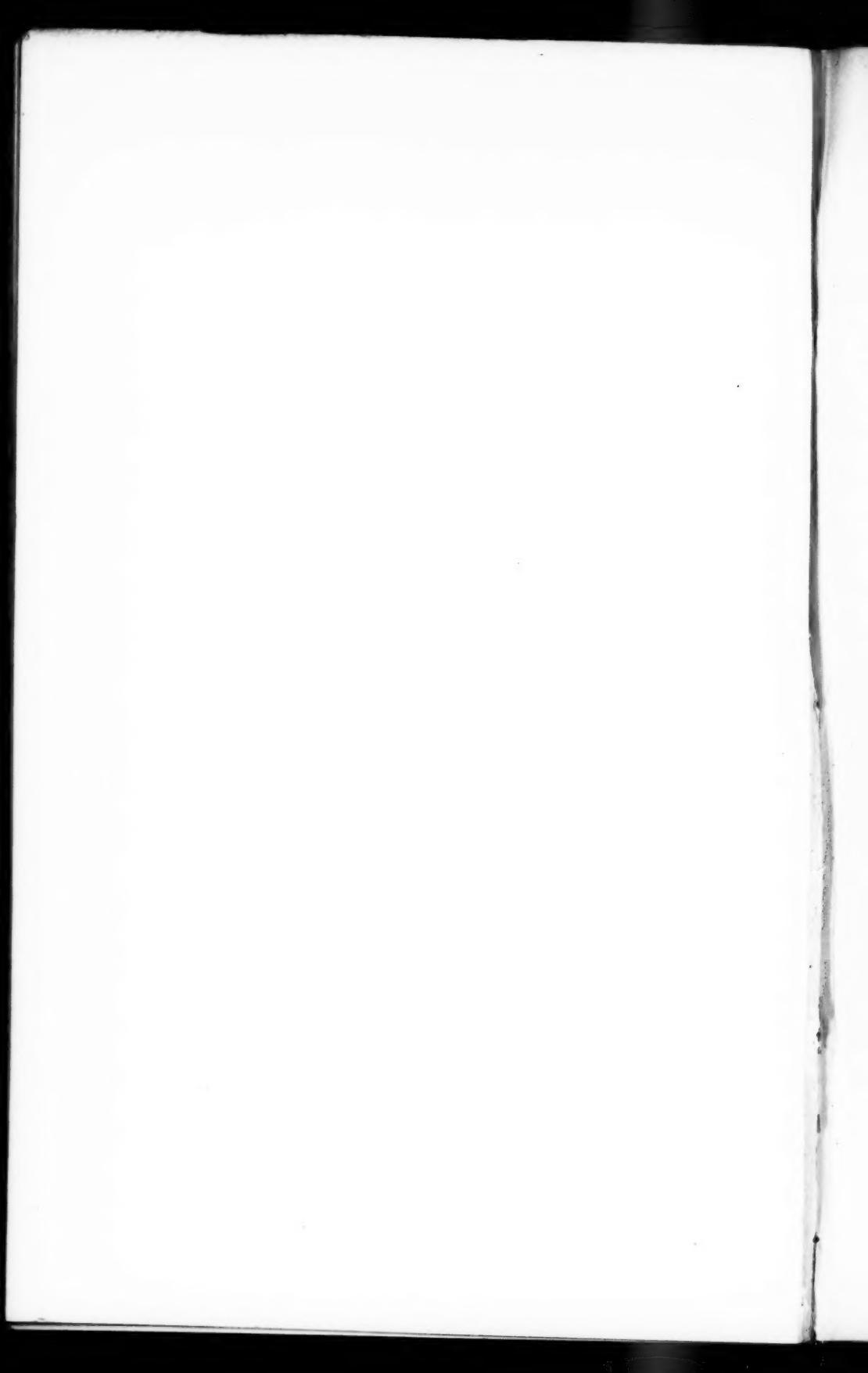


Scale, one half linear.

J.P. Emslie, del.

J.P. & W.R. Emslie, lith.

ANCIENT EGYPTIAN BRONZE IMPLEMENTS.



either side of the skull), connecting the lowest points on the inferior margins of the orbits with the points of the upper margins of the bony auditory meatus situated vertically above their centres" (Plate VIII, figs. 1 and 2, *hh*). In relation to this German horizontal plane is measured the direct length of the cranium, the height, the maximum breadth, the breadth of the forehead, and other cranial measurements; likewise the angle of inclination of the foramen magnum, the profile angle of the face, and several other facial measurements to be enumerated and described further on.

The Craniometric Conferences mentioned have also decided to accept a number of other measurements, which are independent of the horizontal plane of the skull, so that numerous and valuable older measurements which have not been made in relation to "our horizontal plane," and therefore not exactly comparable to it, be not rendered valueless; and secondly, for the important reason that in broken skulls in which the facial region is wanting, as is frequently the case among the most important prehistoric skulls, an exact determination of the German horizontal plane is impossible. In these cases it is decidedly preferable to select fixed anatomical points on the skull, as starting-points for the principal measurements, instead of making uncertain subjective estimates of the probable situation of the plane and of the measurements in relation to it. By the use of these points it is possible to make measurements taken without reference to the German horizontal plane accord with those made in reference to that plane.

The necessity for auxiliary measurements independent of the German horizontal plane, was expressly recognised by both Craniometric Conferences for determining the length of the skull. For measuring the height of the skull the same need is obvious; likewise an auxiliary measurement which, though placed at some distance from the base of the skull, is often indispensable to determine the breadth of the cranium.

The auxiliary measurements of length have already been determined upon by both Conferences. They are the maximum length, and that length "the anterior measuring point of which is situated in the middle of a straight line uniting the centres of the frontal eminences." This latter length-measurement seems to be indispensable for comparing the length of the skull proper of the Anthropoidea with that of man. Both lengths are measured with the callipers.

In the following list the names of the most important measurements of the skull are given, and short descriptions of the methods of ascertaining each. These will be rendered still clearer by the accompanying illustrations (Plates VIII, IX).

Linear Measurements of the Cranium.

1. Horizontal length (*gerade Länge*).—From the middle point between superciliary ridges on the glabella to the most prominent point of the back of the cranium (Plate VIII, figs. 1 and 2), measured parallel to the horizontal plane of the skull with the sliding compasses (*Schiebezirkel*). This measurement of length was agreed upon at the Craniological Conference at Berlin. In cases where the glabella is greatly developed it is desirable, when possible, to measure its thickness.

[To this measurement is appended a note pointing out the necessity of its being always made with the sliding compasses (*Schiebezirkel*), or with Spengel's craniometer, and not with the callipers; because in skulls in which the occiput is very prominent at its lower part, the posterior point on the skull of the horizontal length line will not be so far back as the point at which that line, if prolonged backwards, would intersect a tangent line drawn at right angles to the horizontal plane, and touching the most prominent point of the occiput, fig. 2. In such a case the horizontal length indicated is too short, and must be prolonged to the tangential line of the most prominent part of the occiput. This can only be done with the two first-mentioned instruments. However, even with these practice and repeated control are necessary. In skulls with full and rounded occiputs this is not a difficult measurement to make, since the most anterior and posterior points lie on the same level. Regarding the anterior point on the glabella, a mistake is unlikely to occur. The measuring instrument is always placed in the median line, and between the superciliary ridges when these are separated].

2. The maximum length.—From the centre between the arcus superciliaries to the most prominent point on the back of the head, measured with the callipers without reference to the horizontal plane.

[To this a note is attached to the effect that it is only in skulls where the occiput is elongated posteriorly that a difference, which may be as much as 5 mm., occurs between this and the former length-measurement. When the occiput is full and rounded the horizontal and maximum lengths are identical, and when accurately measured the sliding compasses and callipers give the same results.]

3. Intertuberal length.—From the centre between the two frontal eminences to the most prominent point of the back of the head, without reference to the horizontal plane. Measured with the callipers.

Note.—The intertuberal length in brachycephalic skulls with

good rounded foreheads coincides very nearly with the maximum and horizontal lengths.

4. *Maximum breadth* (fig. 4, B—B).—Measured vertically to the median plane with the sliding compasses wherever it is only not on the mastoid processes or on the posterior temporal ridges. The points of measurement must lie on the same horizontal plane.

4a. *Auricular breadth of Virchow*.—The distance between the two upper borders of the auditory meatus.

5. *Minimum frontal breadth*.—The shortest distance between the frontal ridges near their base, measured with the sliding compasses or callipers (fig. 3, SS).

6. *Height*.—The so-called total height (*ganze Höhe*) of Virchow From the centre of the anterior border of the foramen magnum to the parietal curve, measured vertically to the horizontal plane with the callipers (fig. 1, H). The difference in height of the anterior and posterior borders of the *foramen magnum* will thereby be indicated, by which the Baer-Ecker height is determined.

7. *Auxiliary height*.—In broken skulls, as already stated, where the facial portion is wanting, the horizontal plane cannot be determined. As an auxiliary height which approaches very nearly to the total height, the height from the centre of the anterior border of the *foramen magnum* to the point at which the sagittal and coronal sutures meet (*Bregma* of Broca) should be measured with the callipers.

8. *Ear-height*.—From the upper border of the auditory meatus to the point of the vertex of the head situated perpendicularly above it, measured vertically in relation to the horizontal plane of the skull (fig. 2, OH). Sliding compasses.

9. *Auxiliary ear-height*.—From the same starting-point to the highest point of the parietal curve, about 2—3 cm. behind the coronal suture. Sliding compasses.

10. *Length of the base of the skull*.—From the middle of the anterior border of the foramen magnum to the middle of the naso-frontal suture. Callipers.

11. *Length of the basilar portion*.—To the spheno-occipital suture (starting-point as in No. 10).

12 and 13. *Greatest length and breadth of the foramen magnum*.—Measured in the median plane and transversely to it.

13a. *Breadth of the skull-base*.—Distance between the summits of the mastoid processes.

13b. *Breadth of the base of the skull*.—Distance between the most prominent points on the outer surfaces of the mastoid processes.

14. *Horizontal circumference of the skull*.—Measured with the

steel tape placed immediately above the superciliary ridges and over the most prominent point on the back of the head.

15. *Sagittal circumference of the skull*.—From the naso-frontal suture to the posterior border of the foramen magnum along the sagittal suture. Steel tape.

16. *Vertical transverse circumference of the skull*.—From the upper border of the one auditory meatus to that of the other, perpendicularly to the horizontal plane (2—3 cm. behind the coronal suture. Steel tape. (N.B.—Virchow till now measures No. 16 over the bregma.)

Measurements of the Face.

17. *Breadth of the face, of Virchow*.—Distance between the two jugo-maxillary sutures. The measurement must be made from the under and anterior point of the one suture to the corresponding point of the other.

17a and b. *Breadth of the face, of Von Hoelder*.—(a) Distance between the two inner angles of the malar bones. (b) The distance between two points situated vertically below the apices of the inner angles of the malars on their under borders.

18. *Bi-zygomatic breadth*.—Greatest distance of the zygomatic arches from one another (fig. 4, JB).

18a. *Interorbital breadth*.—Minimum distance between the inner borders of the entrance of the orbital cavities.

19. *Height of face* (fig. 2, GH).—From the middle of the fronto-nasal suture to the middle of the under border of the mandible.

20. *Upper (= middle) face-height*.—From the middle of the fronto-nasal suture to the middle of the alveolar border of the upper jaw, between the central incisor teeth (fig. 2, W—OK).

21. *Height of nose*.—From the middle of the fronto-nasal suture to the middle of the upper surface of the nasal spine, i.e. to the lowest border of the pyriform opening (fig. 2, W—NL).

22. *Maximum breadth of the nasal cavity*.—Wherever that may be measured horizontally (fig. 3, X).

23. *Maximum breadth of the entrance of the orbital cavity*.—From the centre of the median border of the orbital cavity to its lateral border, that is, the clear space between the two borders of the orbital cavity (fig. 3, a).

24. *Maximum horizontal breadth of the entrance of the orbital cavity of Virchow* (fig. 3, c).—Measured parallel to the horizontal plane, otherwise analogous to No. 23. It is very desirable to determine the angle which the lines Nos. 23 and 24 (fig. 3, a and c) make with one another.

25. *Maximum height of the orbital cavity*.—Measured verti-

cally to the greatest breadth between the upper and lower borders (fig. 3, b).

26. *Vertical height of the orbital cavity*.—Measured vertically to No. 24 (fig. 3, d), otherwise analogous to No. 25.

27. *Length of the palate*.—From the point of the palatal spine to the inner lamina of the alveolar border between the central incisor teeth.

28. *Middle palatal breadth*.—Measured between the inner alveolar walls opposite the second molar teeth.

29. *Posterior palatal breadth*.—Measured at the posterior ends of the palate—*i.e.*, between their inner alveolar borders.

30. *Length of the profile of the face* (Kollmann's *facial length*) (fig. 2, GL).—Measured from the most prominent point of the centre of the outer alveolar border of the upper jaw to the anterior border of the foramen magnum (in the median plane).

31. *Profile angle*.—That angle which the profile line makes with the horizontal (fig. 1, < hPf). The measurement of other angles of the face and cranium remains still to be determined.

Measurement of the Capacity of the Skull.

32. The capacity of the skull is measured with shot (in fragile skulls with millet seed). The method to be followed remains for future consideration.

SKULL INDICES.

Length and Breadth Index.

$$\frac{100 \times \text{breadth}}{\text{length}}.$$

Dolichocephalic (long skull)	below 75·0
Mesocephalic	75·1 to 79·9
Brachycephalic (short skull) ..	80·0 " 85·0
Hyperbrachycephalic	85·1 and over.

Length and Height Index.

$$\frac{100 \times \text{height}}{\text{length}}.$$

Chamaecephalic (flat skull) ..	75·0 and under.
Orthocephalic	70·1 to 75·0
Hypsicephalic (high skull) ..	75·1 and over.

Profile Angle.

The inclination of the profile line to the horizontal plane is classified under the three following divisions:—

1. Prognathous 82° and under.
2. Mesognathous or orthognathous 83° to 90°
3. Hyperorthognathous .. 91° and over.

Facial Index (Virchow).

$$\frac{100 \times \text{height}}{\text{length}}.$$

The breadth of the face considered as the linear distance between the two jugo-maxillary sutures. The facial height No. 19. (So also the facial index of Von Hölder).

- | | |
|--------------------------|-----------------------|
| Broad-faced skull | $90\cdot0$ and under. |
| Narrow-faced skull | $90\cdot1$ and over. |

Index of the Upper Face (Virchow).

$$\frac{100 \times \text{upper facial height}}{\text{facial breadth}}.$$

Facial breadth considered as the linear distance between the two jugo-maxillary sutures, and the upper facial height (No 20) as above.

- | | |
|-------------------------------|-----------------------|
| Broad upper face index | $50\cdot0$ and under. |
| Narrow upper face index | $50\cdot1$ and over. |

Zygomatic Facial Index (Kollmann).

$$\frac{100 \times \text{facial height}}{\text{zygomatic breadth}}.$$

The greatest distance between the zygomatic arches (No. 18) and the facial height (No. 19). Divided into two classes—

- | | |
|---|-----------------------|
| Low-faced, chamæprosopic ¹ skull | $90\cdot0$ and under. |
| High-faced, leptoprosopic skull | $90\cdot1$ and over. |

Zygomatic Upper Facial Index (Kollmann).

$$\frac{100 \times \text{upper facial breadth}}{\text{zygomatic breadth}}.$$

Chamæprosopic upper face with an index of $50\cdot0$ and under.
Leptoprosopic upper face with an index of .. $50\cdot1$ and over.

¹ προσωπον, the face.

The upper facial index acts as a control measurement to the facial index. It is important to ascertain it in cases where, through absence of the lower jaw, the facial index cannot be determined.

Orbital Index.

$$\frac{100 \times \text{orbital height}}{\text{orbital breadth}}.$$

Chamaekonchous	80·0 and under.
Mesokonchous	80·1 to 85·0
Hypsikonchous	85·1 and over.

Nasal Index.

$$\frac{100 \times \text{nasal breadth}}{\text{nasal height}}.$$

Leptorhine	47·0 and under.
Mesorhine	47·1 to 51·0
Platyrhine	51·1 „ 58·0
Hyperplatyrhine	58·1 and over.

*Palatal Index (Virchow).**

$$\frac{100 \times \text{palatal breadth}}{\text{palatal length}}.$$

Leptostaphyline	80·0 and under.
Mesostaphyline	80·1 to 85·0
Brachystaphyline	85·1 and over.

The divisions of the indices marked * are provisional; their ultimate determination remains for future consideration.

The following table of the most important measurements and indices of the skull is then added.

Principal Measurements and Indices of the Skull.

CRANIAL PORTION.

No. of Skull.	Origin, Sex, Age.	Capacity.	Length.	Breadth.	Frontal Breadth.	Height.	Ear- Height.	Length of the Base of the Skull.	Horizontal Circumfer- ence.	Sagittal Cir- cumference.	Transverse Vertical Cir- cumference.
...	...	Cap.	L.	B.	B.	H.	E.H.	L.B.	H.C.	S.C.	T.C.

FACIAL PORTION.

Facial Height.	Upper Facial Height.	Facial Breadth.	Zygomatic Breadth.	Nasal.		Orbital.		Palatal.		Profile Angle.
				Height.	Breadth.	Breadth.	Height.	Length.	Breadth.	
F.H.	F ¹ .H.	F.B.	Z.	N.H.	N.B.	O ₁ .	O ₂ .	P ₁ .	P ₂ .	P>.

INDEX.

Length- Breadth.	Length- Height.	Breadth- Height.	Facial.	Upper Facial.	Nasal.	Orbital.	Palatal.	Remarks.
L.B.	L.H.	B.H.	F.H., F.B.	F ¹ .H., F.B.	N.H., N.B.	O ₁ , O ₂ .	P ₁ , P ₂ .	

Sixty-seven signatures of adherence are appended to the Agreement, among which are the names of several well-known anthropologists of Germany. Two signatures, those of Professors Aeby and Schaaffhausen, have riders attached to them. Professor Aeby adds that though he has signed the convention he nevertheless adheres to the fundamental principles expressed in his former works. Professor Schaaffhausen adheres to the Agreement on condition that an improper value be not set on the natural horizontal of the skull, which he has hitherto fixed as a line passing forwards through the centre of the auditory meatus, and cutting the profile line at a fixed point. For uniformity he is willing to take this line from the upper border of the meatus.

Before criticising the so-called German horizontal plane I must remark that it has hitherto been customary to consider those devoting themselves to any branch of science as belonging to one brotherhood, totally irrespective of the country to which they happen to belong, and beyond all national prejudices, with one common aim, namely, that of advancing the department to which they are giving their attention. That anthropologists in Germany should introduce the use of such terms as "German" and "our" to craniometrical questions is much to be regretted, as tending to destroy that feeling of unity which has always existed among scientific men. Nor are the terms alluded to the only exception that can be taken to the Frankfort Agreement. It seems to have been drawn up with little consideration of what has been done by other anthropologists over the world, save that of a few in Germany. Important measurements, which yield marked results in comparing skulls of different races, are entirely ignored, and methods of measuring accepted by anthropologists generally are altered without any reason being given for the change. The accuracy of these observations I now make will be apparent to any one acquainted with the literature of physical anthropology and the systems usually employed.

In drawing up any code of craniometrical measurements the extensive researches of Broca must be taken as the basis, this being the system which has been adopted by anthropologists generally over the whole world.

The horizontal plane adopted by the Frankfort Agreement is one which, in a slightly different form, has been before anthropologists for some time, having been originally proposed by the Russian craniologist, Von Baer, who placed the horizontal plane of the skull along the line of the zygomatic arches. Von Hering modified, or rather defined, this plane more precisely as a line drawn from the centre of each auditory meatus to the lowest

point on the inferior margin of each orbit. By the Frankfort Agreement the plane has been further modified by making the horizontal lines pass from the upper borders of the meatus to the lowest borders of the orbits. In none of its modifications has it been accepted by any except some German anthropologists, and not by all of them even yet. The question, which plane is the skull to be placed in for purposes of drawing and comparing drawings? has been for a long time much disputed, and various positions have been proposed; for a history of the subject I must refer those interested to the researches of Von Ihering,¹ Broca,² and Schmidt,³ as it is too long to enter on here. The horizontal position most generally adopted by anthropologists is the condylo-alveolar plane, which has been shown by Broca to approach nearer than any other to that of the axis of vision when this is horizontally directed. A cranium can very easily be placed with the condylo-alveolar plane horizontal by means of Broca's craniostat or Topinard's very simple craniophore. Photographs or drawings of skulls in this position are very readily and accurately compared. Von Ihering,⁴ Schmidt,⁵ and Spengel⁶ in their respective papers, have advocated the superiority of the audito-orbital plane. My own independent observations show me that in some instances this plane is directed more or less obliquely downwards instead of being horizontal; the same objection has been found to that of Von Baer by Broca. A decided objection to the adoption of the Frankfort plane in preference to the condylo-alveolar, even granting that the merits of the two are equal, is that it is more difficult to place the skull in the former than in the latter plane, and a more complicated apparatus is required. Above all things in anthropological research, simple and accurate instruments, easy of application, are desiderate objects, which, I regret to say, Germans do not always keep in view. As seen in a diagram, the audito-orbital, or so-called "German" horizontal plane, is a very precise and excellent one, but this may be said for several others which have been proposed at various times. The apparatus in which the skull has to be suspended, in order to place it in this plane (a frame such as that figured by Schmidt⁷), is a considerable obstacle in making a geometrical diagram of it with Broca's stereograph, or the *diagraph* of Garard, which are perhaps the

¹ "Arch. f. Anthropol." Bd. v (1872).

² "Bull. Soc. d'Anthrop." (Paris, 1873).

³ "Arch. f. Anthropol." Bd. ix (1876).

⁴ *Loc. cit.*

⁵ *Loc. cit.*

⁶ "Zeit. f. Ethnol." Bd. ix (1877).

⁷ "Arch. f. Anthropol." Bd. ix, p. 34 (1876).

most effective and simplest instruments for obtaining exact geometrical tracings. It is true that the skull could be placed loosely on the craniostat, adjusted to the audito-orbital plane with the frame, then fixed on the craniostat by means of its screw, and finally the frame removed. Such a procedure would, however, be difficult, owing to the care necessary in adjusting the skull, as well as in keeping it in exact position during the process, and consequently errors would frequently occur.

An object to which great importance is evidently attached in the Agreement is that several measurements of the skull shall be taken in relation to the horizontal plane. This idea is not a new one, having been advocated by Spengel¹ and by Schmidt,² but it has not been taken up by anthropologists generally. With all due deference and respect to the opinion of our brethren in Germany, and the anthropologists of world-wide repute who have signed the Agreement, I venture to say that the advantages of having such measurements are chiefly theoretical. They are only obtainable with any degree of accuracy by means of complicated and costly apparatus, suitable only for the laboratory, and not even then, by their own showing, except after repeated control-measurements. The form of the skull is quite as fully and accurately indicated by means of measurements from certain fixed anatomical points with a simple pair of sliding callipers, such as those excellent ones of Professor Flower, which combine all the advantages of the *compas glissière* and the *compas d'épaisseur* of Broca, as by those measurements made in relation to the horizontal plane. The very great advantage of the former measurements is that they can be easily and accurately made without the manipulative skill and practice necessary for making the latter with corresponding accuracy.

From what I have just stated, it naturally follows that I do not attach importance to the horizontal length (*gerade Länge*) of the skull, as I believe the maximum length expresses fully the length of the skull. The fact that the horizontal and maximum lengths are the same excepting unusually formed skulls is sufficient reason, I think, to render a third column of length, in tables of skull measurements, superfluous. As regards the maximum length, it will be observed that it is not stated whether this is measured in the median line, as is directed to be done by Broca, and which should always be followed. The intertuberal length, as defined, is extremely indefinite, but I presume it is that of Welcher, the great objection to which is that its anterior measuring point is very indefinite. The length of the cranium,

¹ Loc. cit.

² Loc. cit.

excluding the glabella, can be much more accurately measured from the ophryon to the most prominent part of the occiput—the ophryo-occipital length of Flower and others.

The auricular breadth of Virchow likewise wants definition, the upper border of the auditory meatus being on a rapidly sloping plane. If the points of measurement are situated where the auriculo-bregmatic lines cross the prolongation ridges backwards of the zygomatic arches, the measurement is a very good one, being what we know in England as the bi-auricular breadth, which differs from that of Broca by including instead of being *above* the zygomatic ridges.

The height (No. 6), as recommended to be taken, is an unsatisfactory measurement. The auxiliary height (No. 7), taken from the basion to the bregma, is the height-measurement adopted now by the great majority of anthropologists, and is one of the most certain measurements of the skull, on account of the precision of those two points. The ear-height and auxiliary ear-height must also be classed as unsatisfactory, since all measurements which require to be made indirectly, that is, by measuring to a point off the skull, but corresponding to a point on it, are very uncertain, being difficult to measure and as frequently inaccurate as they are correct.

The length of the basilar portion of the cranium (No. 11) recommended can only be measured accurately in skulls when the basilar suture is still open. It is, however, a rule in craniology to reject all skulls in which the basilar suture is open; yet we have here a measurement proposed from the basion to that suture which closes about the twenty-fifth year, and in the majority of skulls is so obliterated by about the thirtieth year as not to be discernible with accuracy. The best measurement of this portion of the cranium is undoubtedly that proposed by Broca, from the basion to the posterior edge of the vomer.¹

The breadth of the base of the skull at the base and summits of the mastoid process (Nos. 13a and 136b) have ceased to be taken by several anthropologists, as not being satisfactory measurements, and in my opinion should not find a place in a list of only the more important cranial measurements.

The vertical transverse circumference (No. 16) is in reality only an arc, not being continued across the base of the cranium, and differs from that designated the supra-auricular or bregmatic arc (which passes from one auditory point over the bregma to the other) in being taken perpendicularly to the horizontal plane, and consequently is not so good a measurement as the bregmatic arc. It will be observed that unanimity does not exist even among the framers of the scheme as to this measure-

¹ "Revue d'Anthrop." 2nd ser., vol. v, p. 584.

ment, since in a note it is stated that "till now Virchow measures over the bregma." It is to be hoped that he will prevail on his colleagues to adopt his method.

As the other measurements of the cranium defined in the Agreement, viz., the maximum breadth, minimum frontal breadth, basio-nasal length, length and breadth of the foramen magnum, and the horizontal circumference, are exactly the same as those of Broca used generally by anthropologists, I need not allude to them.

We now come to consider the facial measurements; the first of these is the facial breadth of Virchow (No. 17), which is known in Broca's list of craniometrical measurements as the maximum bi-maxillary breadth, a name indicating its real character much better than that of facial breadth. It is a very precise and excellent measurement, and I almost think might replace Broca's bi-malar breadth, which, though it yields good results in distinguishing races, is very difficult to measure, and uncertain.

Under the facial breadth of Von Hoelder two measurement are included, viz.: the bi-jugal breadth and a similar measurement on the under-surface of the jugal bone, which is more uncertain, and, as far as I can see, superfluous. The first measurements (No. 17a) should be retained under the name of bi-jugal breadth, by which it is universally known.

The height of the face and of its upper or middle portion (Nos. 19 and 20).—The total height of the face, as here defined, from the basion to the under border of the mandible, can rarely be ascertained, owing unfortunately to the mandible or the teeth being frequently absent. The height of the middle portion is more practicable, and is a very useful measurement, giving not only the height of the face from the alveolar point to the nasion, but also completing the facial triangle when taken in conjunction with the basio-nasal and alveolar lengths. I am bound to admit that the facial height of Broca, which is the distance from the alveolar point to the ophryon, is an unsatisfactory measurement, owing to the ophryon not being a definite enough point; though on theoretical grounds it may be a good measurement, the portion of the skull between the nasion and the ophryon being more a portion of the face than of the brain-case proper. In matters where precision are concerned, I think theoretical reasons must yield to practical, and on this ground I for one would be happy to accept the nasio-alveolar height as the height of the face. The measurement, including the mandible, I think, we must consider impracticable, though it might be measured whenever possible. Of the measurements of the orbit I regard the horizontal width and vertical height (Nos. 24 and 26) as uncertain and

unnecessary: uncertain, because they cannot be taken with sufficient accuracy, or only from a geometrical projection of the skull on paper, and unnecessary since the maximum width and height give the information required. I am quite aware that it is desirable to estimate the angles at which the transverse axes of the eyes make with the median line, but I believe this could be more accurately measured by direct means than by measuring the angles of incidence of the horizontal and maximum width lines.

The length and breadth of the palate are somewhat similar to those recommended by Broca, but cannot be considered satisfactory, firstly because it is very seldom that the palatal spine is perfect, and secondly because the spine does not represent the true length of the palate, being a bony prolongation beyond its posterior border. Some years ago Professor Flower¹ proposed a method which I believe to be preferable to that of Broca's, viz.: the length of the palate, from the alveolar point to the line of the posterior tuberosities of the maxillæ, measured in the mesial line; the breadth, that between the external lamellæ of the maxillary bones opposite the second molar tooth. These measurements, which can be ascertained with ease and precision, he has termed the maxillary length and breadth. The posterior palatal breadth does not seem to me to be of such importance as to warrant its insertion in such a table of measurements as that under review.

The length of profile of the face of Kollmann (No. 30) is the same as the basio-aveolar length of Flower,² and is a most valuable measurement. The name applied to it is, however, inferior to that of "basio-alveolar length," which is much more expressive. The profile angle (No. 31) is extremely ill-defined, but from the diagram appended (fig. 1, Pf) I conclude it is the profile angle of Von Ihering,³ which is the angle which a line passing from the nasion to the alveolar point makes with the horizontal line. Such an angle cannot be directly and accurately measured on the skull, but only on a drawing or diagram; consequently it is very objectionable, and should not be adopted. This angle, moreover, does not represent the true profile of the face if the previous measurement, No. 30, is considered, as it has been, the length of profile. The profile angle would logically be the angle at the alveolar point which the basio-alveolar line (No. 30) makes with the profile line, and which is undoubtedly the true profile angle.

The method of indicating prognathism or orthognathism

¹ "Journ. Anthropol. Inst." vol. x, p. 161 (1880).

² "Proc. of the Royal Inst. of Great Britain," 1878.

³ "Arch. f. Anthropol.," Bd. v (1872).

which to my mind is the simplest, and at the same time very effective, is that of Professor Flower.¹ It consists of forming an index from the basio-nasial and basio-alveolar measurements, the former being taken as 100; the formula is therefore $100 \times \text{basio-alveolar length}$.

When the index is below 100, as basio-nasial length in most Europeans, the face is straight or orthognathous, but when over that number, as in most negroes, it is more or less prognathous. This index has been divided by Flower into three classes:—

Orthognathous	below 98·0
Mesognathous	98·1 to 103·0
Prognathous..	above 103·0

The other measurements, namely, the bi-zygomatic and inter-orbital breadths, the length and breadth of the nose and of the orbit (Nos. 23 and 25), are the same as those defined by Broca in the "Instructions Craniologique," and usually adopted by anthropologists.

We have finally to examine the indices of the chief dimensions of the skull, and the classification proposed for them. The length-breadth, or cephalic index, is not properly defined, the length-measurement to be used in estimating it not being stated. The limits of the divisions into dolicho-, mesati-, and brachycephalic correspond exactly to those of Professor Flower,² but there is an additional group, the hyperbrachycephalic. The height index closely corresponds to Broca's divisions. The length measurement used in calculating this index is likewise not stated. The facial indices of Virchow are no indications of the facial breadth to its length, since the facial breadth used in the calculation of the indices is the superior bi-maxillary width, whereas the true breadth of the face is the bi-zygomatic width which has been adopted by Kollmann. The facial indices of Virchow might, it appears to me, be omitted from the list, and those of Kollmann, which are good indices, be retained. The orbital index differs from that of Broca and Flower in each of its three divisions, being two units lower than in the classification of these anthropologists. The nasal index is also one to two units lower than theirs, and has an additional division, that of hyperplatyrhine. The palatal index differs considerably, being no less than nearly ten units higher in the Frankfort classification than in Broca's, but it is stated the classification of this index is not definitely settled yet, as well as those of the length and breadth of the face.

¹ Osteological Catalogue of the Museum of the Royal College of Surgeons (1879), Part I, p. 251; and "Journ. Anthropol. Inst.", 120 (1879).

² Loc. cit.

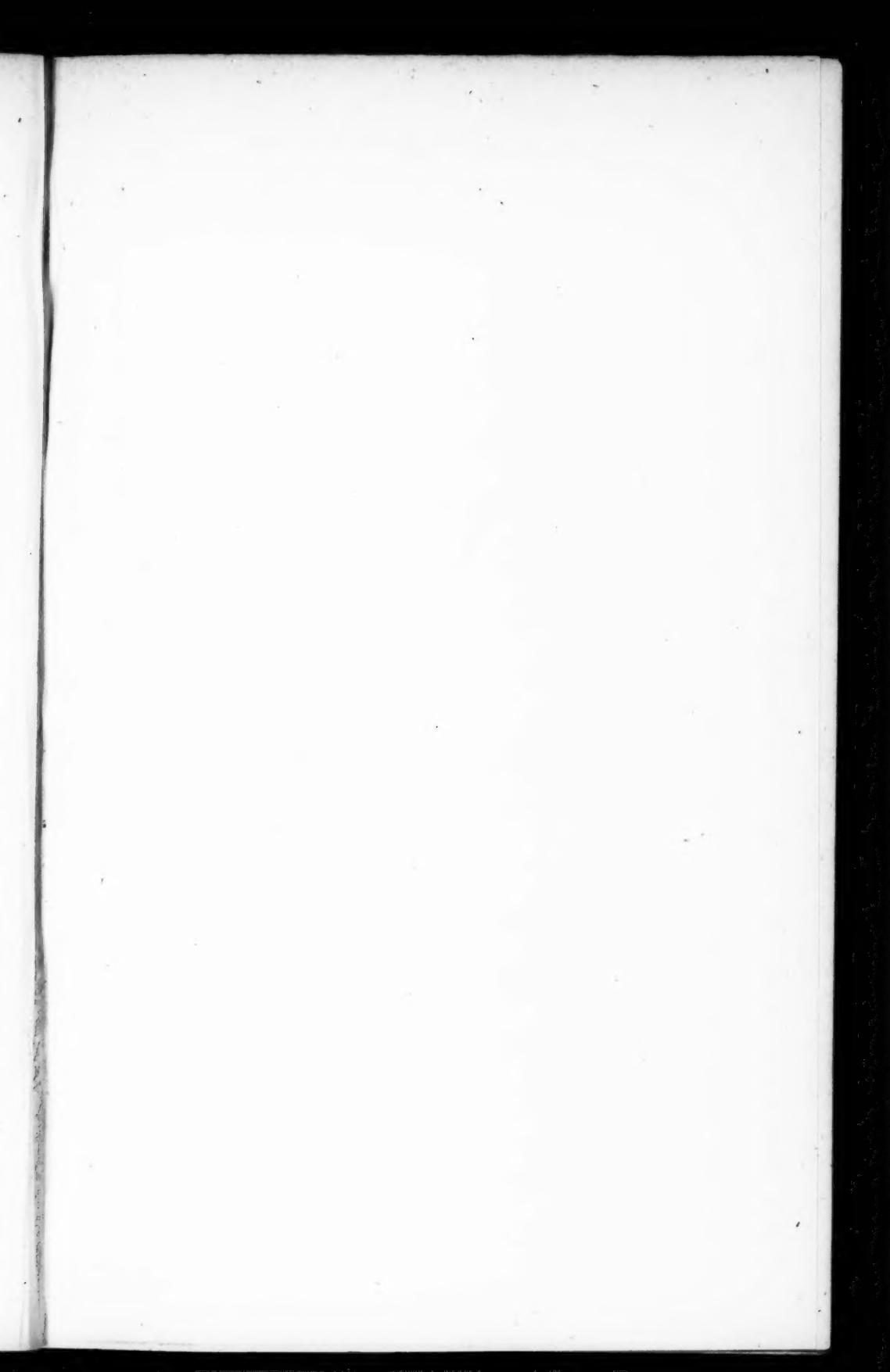
In connection with the nomenclature of the different indices, certain distinctive and technical terms have been introduced in addition to those already in use, which will prove useful in describing the form of different parts of the face especially. Why similar terms invented by Broca, and now universally applied to certain points from which measurements are made—such, for example, as “basion,” “ophryon,” and several others—are entirely discarded for roundabout descriptions and definitions of the points, is not easy to understand, as by their use clearer ideas are conveyed as to points of measurement. It is also to be regretted that anthropologists in Germany have separated themselves from those in the rest of the world, by not adopting the same limits in the classification of indices derived from measurements universally used, such as those of the orbit and nose, the result of which will only be to cause confusion and detract from the value of certain convenient terms. We trust that when the limits of those indices, which are not yet definitely fixed, are finally arranged, due regard will be paid to the classification of those adopted by other anthropologists as well as those in Germany.

CONCLUSION.

After a careful study of the Frankfort Code of Measurements I think that it will be generally felt by anthropologists that while in some respects it is a step towards the unification of the methods of research in physical anthropology, which will be hailed with satisfaction, yet in others it is extremely unsatisfactory. It is satisfactory that the importance of the following measurements (numbered the same as in the text of the Agreement) has been recognised, and the method of making them is now agreed upon generally:—

- | | |
|--------------------------------------|-----------------------------|
| 2. Maximum length. | 17a. Bi-jugal breadth. |
| 4. Maximum breadth. | 18. Bi-zygomatic breadth. |
| 5. Minimum frontal breadth. | 18a. Inter-orbital breadth. |
| 7. Height (basio-bregmatic). | 21. Height of nose. |
| 10. Basio-nasal length. | 22. Breadth of nose. |
| 12. Length ¹ } of foramen | 23. Orbital breadth. |
| 13. Breadth } magnum. | 25. Orbital height. |
| 14. Horizontal circumference. | 30. Basio-alveolar length. |
| 15. Fronto-occipital arc. | |

¹ This measurement should certainly be added in the short table of “Principal Measurements,” as without it the total sagittal circumference of the brain-case cannot be estimated.



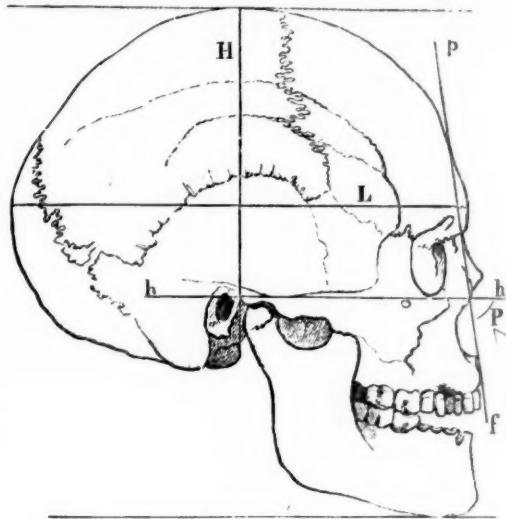


FIG. 1.

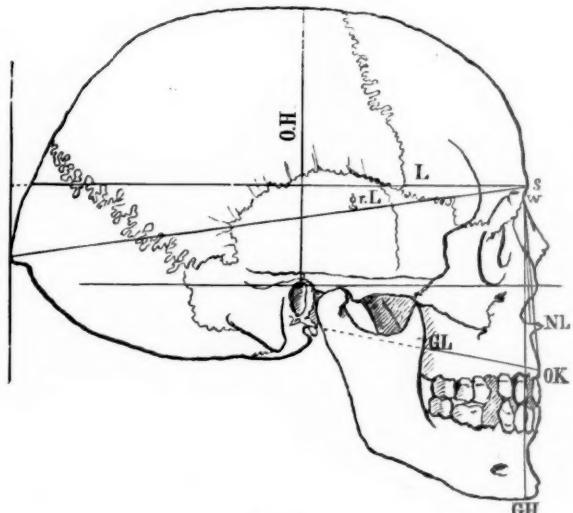
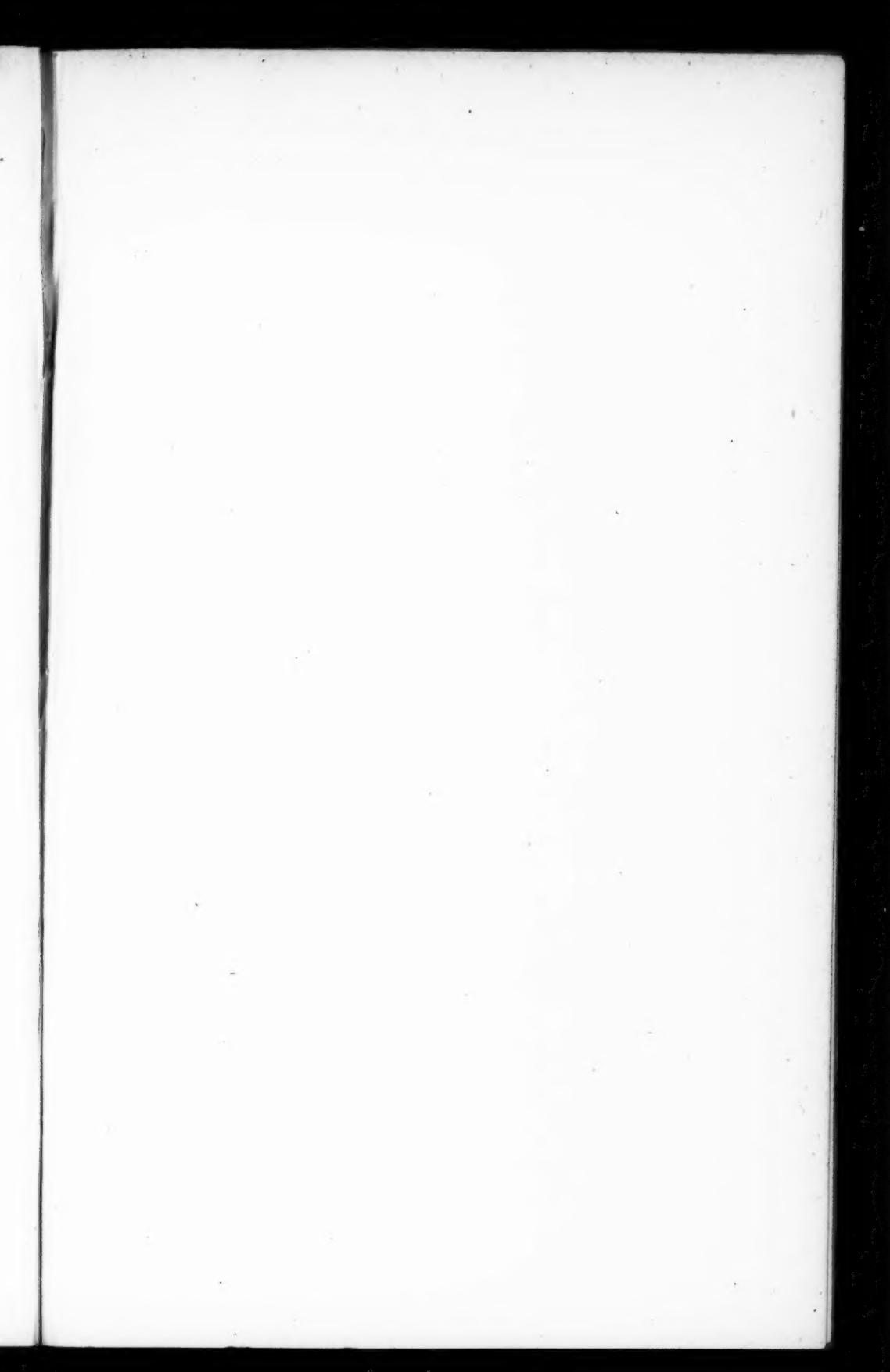


FIG. 2.

DIAGRAMS ILLUSTRATING CRANIAL MEASUREMENTS



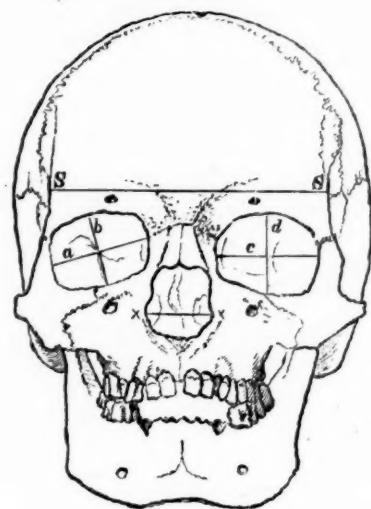


FIG. 3.

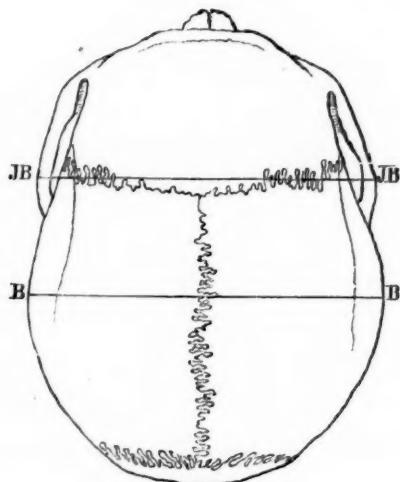


FIG. 4.

DIAGRAMS ILLUSTRATING CRANIAL MEASUREMENTS.

The unsatisfactory portion of the Agreement is, that we must refuse to accept the following measurements proposed in it:—

- | | |
|--------------------------------|---|
| 1. Horizontal length. | 17b. Infrajugal facial breadth. |
| 6. Total height. | 24. Maximum horizontal orbital breadth. |
| 8. Ear-height. | 26. Vertical height of orbits. |
| 9. Auxiliary ear-height. | 27. Palatal length. |
| 11. Basilar length. | 28. Palatal breadth. |
| 13a. Bi-mastoid width. | 29. Posterior palatine breadth. |
| 13b. Breadth of base of skull. | 31. Profile angle. |
| 16. Transverse vertical arc. | |

Some of these are not accepted, owing to the points on the skull between which they are made not being satisfactory, and there is reason to hope that an understanding might be come to regarding them. The case is not so hopeful regarding others, which would appear from the text to involve the fundamental principles of the whole "Agreement"—I refer to the system of measuring the skull in relation to the Frankfort horizontal plane, to which we cannot assent, and which we would fain hope to see abandoned by our brethren in Germany for the more practical method adopted by the majority of anthropologists elsewhere.

Description of Plates VIII and IX.

Four Diagrams illustrating some of the cranial measurements recommended by the Frankfort Conference. Reproduced from the "Archiv für Anthropologie" by the courtesy of the German Anthropological Society, through Professor J. Ranke, of Munich.

DISCUSSION.

Professor STRUTHERS, of Aberdeen, expressed his concurrence with the views of Dr. Garson. As one who had been long engaged in anatomical teaching, he felt the new interest which had been given to the study of the anatomy of these parts by regarding them from the anthropological point of view, as well as the interest which had been given to anthropology by importing into it anatomical considerations. He went on to say that it seemed to him that much might be done to explain the forms of skulls by considering the functions of their several parts, especially the influence exerted by the muscles of the jaw, and suggested this as an inquiry worthy of the attention of some of the younger anatomists who had time to pursue it.

Professor THANE observed that the meeting was greatly indebted to Dr. Garson for the trouble he had taken in bringing this code before the Institute, for the full and clear account he had given of it, and for the criticism to which he had subjected it. With the

main features of that criticism the speaker entirely agreed. The names of those by whom the code had been prepared, and the list of those by whom the system had already been accepted, including most, if not all, of the eminent anatomists in Germany, who were working with so much zest and success in this branch of anthropology, must claim for it a most respectful consideration; and, moreover, it must be remembered that we had not before us a complete series of craniometrical instructions adapted for the guidance of beginners or of foreigners who could not be expected to be acquainted with the numerous and prolonged discussions of which the code is the outcome, and therefore the impressions which the study of the code alone had made upon us might be subject to modification in the light of further information. Additional information was especially to be desired as to the precise method of taking some of the measurements and the instruments which were employed, as to the objects of others, and as to the grounds upon which the selection of many of them was based. The principle upon which the chief dimensions of the cranium and the degree of projection of the facial portion of the skull were estimated was, however, obvious. An attempt was made to ascertain the horizontal and vertical extent of the skull while in its natural position, as it was carried during life. To this proceeding there were many objections, both to the principle itself and to the method of carrying it into practice. Whichever of the many that had been suggested be selected as the horizontal plane of the skull, the position must be an artificial one, for it was well known that all these planes varied more or less in different individuals in their relation to the true horizontal of the head, the visual axis. In this system the principal length of the cranium was in some cases not a direct measurement of the skull at all, but only a statement of its antero-posterior projection in a conventional position. To calculate indices from this dimension was misleading, since the relation of the height and breadth to the actual length of the skull was not thereby indicated; and at the same time it became extremely difficult, if not impossible, to compare results obtained from the measurement of skulls with observations on living persons. The remarks in the code itself, as to the close agreement between the vertical height and the basio-bregmatic height were a strong argument for preferring the latter, which was taken easily and directly between well-defined anatomical points, to a measurement that could only be taken indirectly, with difficulty, and with considerable liability to error. The system, in fact, strove after a mathematical accuracy which was unattainable in dealing with objects that showed so much individual variation, and in the effort to obtain this a violence was done to nature that, in the speaker's opinion, far outweighed the theoretical advantages of the plan. With regard to the horizontal that had been chosen, the "German horizontal plane," apart from the circumstance that the skull when placed as directed was in many cases obviously not in its natural position, laboured under

the disadvantage that the tranverse lines joining respectively the highest points of the ear-openings and the lower margins of the orbital apertures were frequently enough not parallel, so that the so-called horizontal lines necessarily differed on the two sides of the head, and could not be brought into one plane. The individual measurements had been so fully discussed by Dr. Garson that further remarks upon them would be superfluous, and Professor Thane only expressed his feeling that it was greatly to be regretted that the French system, that was now meeting with such wide acceptance in other countries than Germany, appeared to be entirely ignored, and that even the convenient terms introduced by Broca for the various important craniometrical points and regions were not made use of.

The PRESIDENT also took part in the discussion, and the AUTHOR replied.

On some PALÆOLITHIC FISHING IMPLEMENTS from the STOKE NEWINGTON and CLAPTON GRAVELS. By JOHN T. YOUNG, F.G.S.

(*Abstract of a Paper read before the Anthropological Institute,
February 12th, 1884.*)

MR. YOUNG said that it had occurred to him that in view of the large number of implements obtained from these gravels, a careful and systematic examination ought to bring to light a number of the smaller and less obvious tools which, when found and identified, might be useful, not only in illustrating the habits of the men who made them, but also as a guide in the examination of other and similar deposits when, as is often the case, the larger and better known implements are not readily discovered. Acting on this principle Mr. Young had discovered and exhibited to the meeting the following amongst other forms:—

1. A number of flint hooks varying in size from $\frac{1}{4}$ inch to more than 4 inches in length, and in weight from a few grains to over $\frac{1}{2}$ lb.; some of these had a shank to which a line might be attached without difficulty, but in other cases the top of the shank was either worked flat or trimmed to a blunt point, presumably for insertion into bone or wood.

2. A series similar in form to each other, but differing much in size, which he thought were probably used as armatures for wooden hooks, such as are described in Ellis's "Polynesian Researches." The Polynesian hooks were sometimes as much as 12 or 15 inches long, exclusive of the armatures, and of every form and size.

Two specimens of modern hooks with bone points were also exhibited in illustration of the author's views—one a North American halibut hook, and the other Polynesian for use without bait.

3. A series of double-pointed implements, some straight and others curved, and varying in sizes, which Mr. Young thought were fish gorges—implements which had been used in all parts of the world and in all ages.

4. A number of celtiform implements or weapons, varying from $\frac{1}{8}$ inch in length by every gradation to the ordinary sizes of celts. These he classified provisionally, according to size, as spear-, javelin-, and arrow-heads.

ANTHROPOLOGICAL MISCELLANEA.

On ARTIFICIAL DEFORMATION of the HEAD in SUMATRA, CELEBES, and the PHILIPPINE ISLANDS. By A. B. MEYER, M.D., Director of the Royal Ethnological Museum, Dresden; Corr. Memb. Anthropol. Institute.

IN No. IV, Vol. XIII, of the "Journal of the Anthropological Institute of Great Britain and Ireland" (May, 1884, p. 402), Mr. H. O. Forbes, referring to a paper of mine in *Nature* for December 8th, 1881, says: "Cases were recorded from Sarawak and Celebes which evidently were instances of undoubted intentional deformity; *the others, from Celebes, Philippine Islands, Sumatra, Timor, and Timor-laut, had no authentic history beyond what was deduced from an examination of the specimens.*" Mr. Forbes doubts, therefore, the intentional deformation in the cases printed above in italics, and appears never to have heard of the custom in Sumatra, also quoting Marsden, who says: "The children are nursed but little, and are not confined by any swathing or bandage."

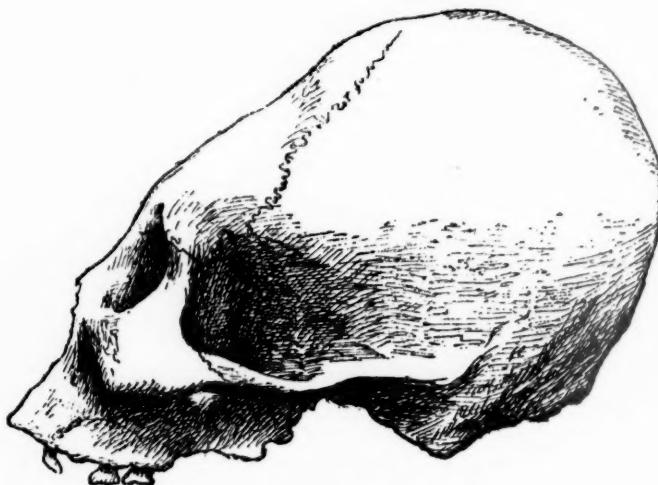
It was certainly never my opinion that in *all* the cases quoted by myself the deformation was intentional, as can easily be seen by reference to my original paper, "Über künstlich deformirte Schädel," &c. (Leipzig, 1881), of which the notes in "*Nature*" were only a short abstract; but, on the other hand, it is there shown that the statement of Mr. Forbes, as to Sumatra, Celebes, and the Philippine Islands, is erroneous.

The same Marsden, quoted by Mr. Forbes, also wrote ("History of Sumatra," 3rd edition, 1811, p. 44): "The women have the custom of compressing the heads of children newly born, whilst the skull is cartilaginous, which increases their natural tendency to that shape;" and other references are given as to Sumatra on page 13 of my paper.

With regard to Celebes, here too Mr. Riedel, one of our best authorities on this island, if not the best, said ("Zeitschrift für Ethnologie," VII, Verh. 11, 1875) that the custom is in use with the Bugis, and these are scattered all over the island. The same author has seen the custom in practice with the inhabitants of Buol, Kaidipan, and Bolang-itam, in North Celebes, which is the only case Mr. Forbes appears to recognise as convincing. But, besides, Mr. Wilken, another authority on Celebes, observed the custom at

Passan and Ratahan in the Minahassa (see "Tijdschr. v. Ind. Taal, Land en Volkenkunde," Vol. XXI, 374, 1874); the process of deforming here going on during fifty to sixty days. Further, Mr. Riedel states the same for Central Celebes with the Toragi, Tondai, Toran, and Tomori tribes (see "Zeitschrift für Ethnologie," VI, Verh., p. 215, 1874, with figures), and describes the process in detail; finally, the same author does so for the Bautiks in the Minahassa and in Mongondu, and for the other inhabitants of Mongondu (see *ibid.*, VII, Verh., p. 11, 1875, with figures). After all this, which can be read in detail in my paper, there can be no doubt but that the custom is spread nearly over the whole of Celebes.

As to the Philippine Islands, the case is equally obvious. Thévenot, who wrote in 1664 ("Rel. de divers Voyages," nouv. édition, Vol. I, Paris 1696, p. 6, of the chapter, "Rel. des Isles Philippines"), says: "Ils auoient accoustumé dans quelques-vnes de ces Isles, de mettre entre-deux ais la teste de leurs enfans, quand ils venoient au monde, et la pressoient ainsi, afin qu'elle ne demeura pas ronde, mais qu'elle s'estendit en long ; ils luij aplatissoient aussi le front, croyant que c'estoit vn trait de beauté de l'avoir ainsi."



DEFORMED SKULL FROM A CAVE IN MATIPANO, SOUTH MINDANAO.

The accompanying figure, taken from a photograph, of a skull from the west coast of the small island of Matipano, in the Gulf of Davao, South Mindanao, and which Dr. Schadenberg discovered in a cave there, is, besides, as convincing a proof of intentional artificial deformation as is that of an old Peruvian or a flat-head Indian skull.

Dr. Schadenberg alone discovered a dozen and more of these skulls; besides, such were found before by Mr. Marche, Dr. Jagor,

Mr. Montano, and others, from other islands of the Philippine group. Therefore, no further proof is needed that intentional artificial deformation was practised formerly all over the Philippine Islands.

I only wished on this occasion to prove my case for Celebes, Sumatra, and the Philippine Islands, as it would lead me too far to repeat all that I have said concerning other places in the Malay Archipelago. As to Timor and Timor-laut I did not assert an intentional deformation (see pp. 23 and 24), but, on the contrary, have entered fully into the question of unintentional deformation at different parts of my paper.

LEGENDS OF THE AUSTRALIAN ABORIGINES.

By Mr. F. C. URQUHART.

No. 1. *How fire was first obtained.*

"A LONG time ago," so runs the Kulkadone legend, a certain tribe of blacks were gathered together on some of the open downs in North-West Queensland. They had had a very successful day's hunting, and the carcasses of many slain kangaroos lying about the camp bore witness to their skill. The gins were gathering grass, pounding up lily roots, and making all the usual preparations for a night's rest, when a violent thunderstorm broke immediately over the camp. The vivid lightning set fire to the loose dry grass of the downs, which blazed fiercely, scorching and partially roasting some of the dead kangaroos. When the people came to eat these semi-roasted portions, it was universally admitted that the meat in a partially cooked state was a great improvement on the raw flesh which had hitherto been their staple article of food : so an old woman was despatched to follow up the fire, still to be seen blazing on the downs, and to bring some back with her. After some time she returned, bearing a blazing firestick as the witness of the success of her mission. She was then appointed permanent caretaker of the fire and solemnly admonished by the elders of the tribe never to lose it or allow it to go out. For many weary years the old woman faithfully fulfilled her trust, until one fatal night in the wet season, when the camp was swamped with water, her vigilance relaxed, and the dreaded disaster befel the tribe—the fire went out. When daylight broke, no fire was forthcoming, and the old woman was brought up to give an account of her charge. As a punishment for her neglect, she was condemned to wander alone through the bush until she could find the lost fire. Long, says the legend, did she stray about that trackless wilderness in solitude, vainly searching for the lost gift, till, one day while passing through a thick scrub her patience and temper gave way, and by way of venting her rage she broke off two sticks from adjacent trees and rubbed them

violently together. To her astonishment and delight the friction of the sticks produced fire, and she returned to her tribe in triumph with her precious discovery, which has never since been lost by them.

The foregoing story, though very simple, is of value as being a *bond fide* aboriginal legend, and it must be admitted that for feasibility it contrasts favourably with the story of Prometheus and other similar mythological legends of ancient history bearing on the same subject.

No. 2. *The Immortality of the Soul.*

In the year 1882-3, in the course of my duty as a native police officer, I had a great deal to do with a tribe of blacks called "Kwearriburra" on the Lynd River. One of their customs, from the fact that it demonstrates the aboriginal belief in a life after death, is worth preserving and placing on record.

When passing through blacks' country I frequently noticed graves upon which fires had been lighted, and this sight always recalled to my mind passages in Longfellow's "Hiawatha," describing a similar practice as existing among North American Indians, and I was led to inquire whether the Kwearriburras had the same object in view as the red-skinned warriors of Lake Superior, viz., to light the disembodied spirits on their journey to the "Land of the Hereafter."

The result of my inquiries was to show that although the cases are apparently analogous, no real parallel can be drawn between them; for, fantastic as the Red Indian's motives are, those of the Kwearriburras are still more so. The latter hold that, unless strong preventive measures are taken, the spirits of departed members of the tribe rise from their graves and continually haunt and otherwise annoy those who are still in the flesh. Accordingly, elaborate precautions are adopted to keep the unfortunate ghosts confined in the grave which holds their mortal clay. The *modus operandi* is as follows:—

On the death of a member of the tribe, his or her head is cut off and the trunk placed in a grave in the usual squatting position, and covered up. A fire is then lighted on the top, in which the head is roasted; when it is thoroughly charred it is broken up into little bits amongst the hot coals, and the fire is then left to die gradually out. The theory is that the spirit rising from the grave to follow the tribe misses its head, and goes groping about to find it; but being bereft of its head, it is of course blind, and therefore, not being able to see the fire, gets burnt. This frightens it so terribly that it retires into the grave again with all expedition, and never again presumes to attempt a renewal of social intercourse with the human denizens of this world.

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

APRIL 22ND, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The PRESIDENT welcomed the members to their new rooms, and reviewed the history of the Institute and of the two preceding Societies, from the original foundation of the Ethnological Society in 1843.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From the GOVERNMENT OF THE PUNJAB.—Report of the Census of the Punjab, taken on 17th February, 1881. 3 vols.

From the AUTHOR.—Excursioni Paletnologiche in Valsolda nell' Agosto e Settembre, 1883. By Pompeo Castelfranco.

— Gruppo Lodigiano della I^a età del ferro. By Pompeo Castelfranco.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie, 1884, Heft 1.

From the ITALIAN ANTHROPOLOGICAL SOCIETY.—Archivio per l'Antropologia e la Etnologia. Vol. XIII, Fas. 3.

VOL. XIV.

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- From the ACADEMY.**—*Atti della R. Accademia dei Lincei. Transunti.* Vol. VIII, Fas. 7-9.
- *Kongl. Vitterhets historie och Antiquitets Akademiens Månadsblad.* Årgången. 11, 12.
- From the R. ACCADEMIA DEI LINCEI.**—*Atti Parlamentari: Camera dei Deputati.* Tornata del 15 Marzo, 1884.
- From the ASSOCIATION.**—*Proceedings of the American Association for the Advancement of Science.* 31st Meeting, Montreal, August, 1882. Parts 1, 2.
- *Proceedings of the Geologists' Association.* Vol. VIII, No. 5.
- *The Journal of the Royal Historical and Archæological Association of Ireland.* No. 56.
- *Transactions of the National Association for the Promotion of Social Science,* 1883. Huddersfield.
- From the SOCIETY.**—*Boletim da Sociedade de Geographia de Lisboa.* Nos. 4, 5, 1883.
- *Bulletins de la Société d'Anthropologie de Paris,* 1884. Fas. 1.
- *Proceedings of the American Philosophical Society.* No. 113.
- *Proceedings of the Royal Geographical Society.* April, 1884.
- *Journal of the Asiatic Society of Bengal.* Vol. LII, Part II, Nos. 2-4.
- *Proceedings of the Asiatic Society of Bengal.* No. IX. November, 1883.
- *Bulletin de la Société de Borda, Dax.* 1884, No. 1.
- *Transactions of the American Philosophical Society.* Vol. XVI, Part 1.
- From the EDITOR.**—*The Journal of Mental Science.* No. 129.
- *Mériaux pour l'Histoire de l'Homme.* April, 1884.
- “*Nature.*” Nos. 752, 754, 755.
- *Panjab Notes and Queries.* No. 6.
- “*Psyche.*” April, 1884.
- *Revue d'Anthropologie,* 1884. No. 2.
- *Revue Politique et Littéraire.* Tom. XXXIII, Nos. 13-16.
- *Revue Scientifique.* Tom. XXXIII, Nos. 13-16.
- “*Science.*” Nos. 59-62.
- *Timehri.* Vol. II, Part 2, December, 1883.

The election of W. MORRIS BEAUFORT, Esq., was announced.

The MARQUIS of LORNE exhibited a collection of Ethnological objects from Canada, upon which Professor FLOWER, Mr. PARK HARRISON, Professor RUPERT JONES, Miss MARSHALL, and Mr. BLOXAM made some remarks.

The DIRECTOR read a note by Sir RICHARD OWEN, on a portrait of an aboriginal Tasmanian. The PRESIDENT, Mr. BONWICK, and Mr. MONCURE CONWAY took part in the discussion.

The following paper was then read by the author:—



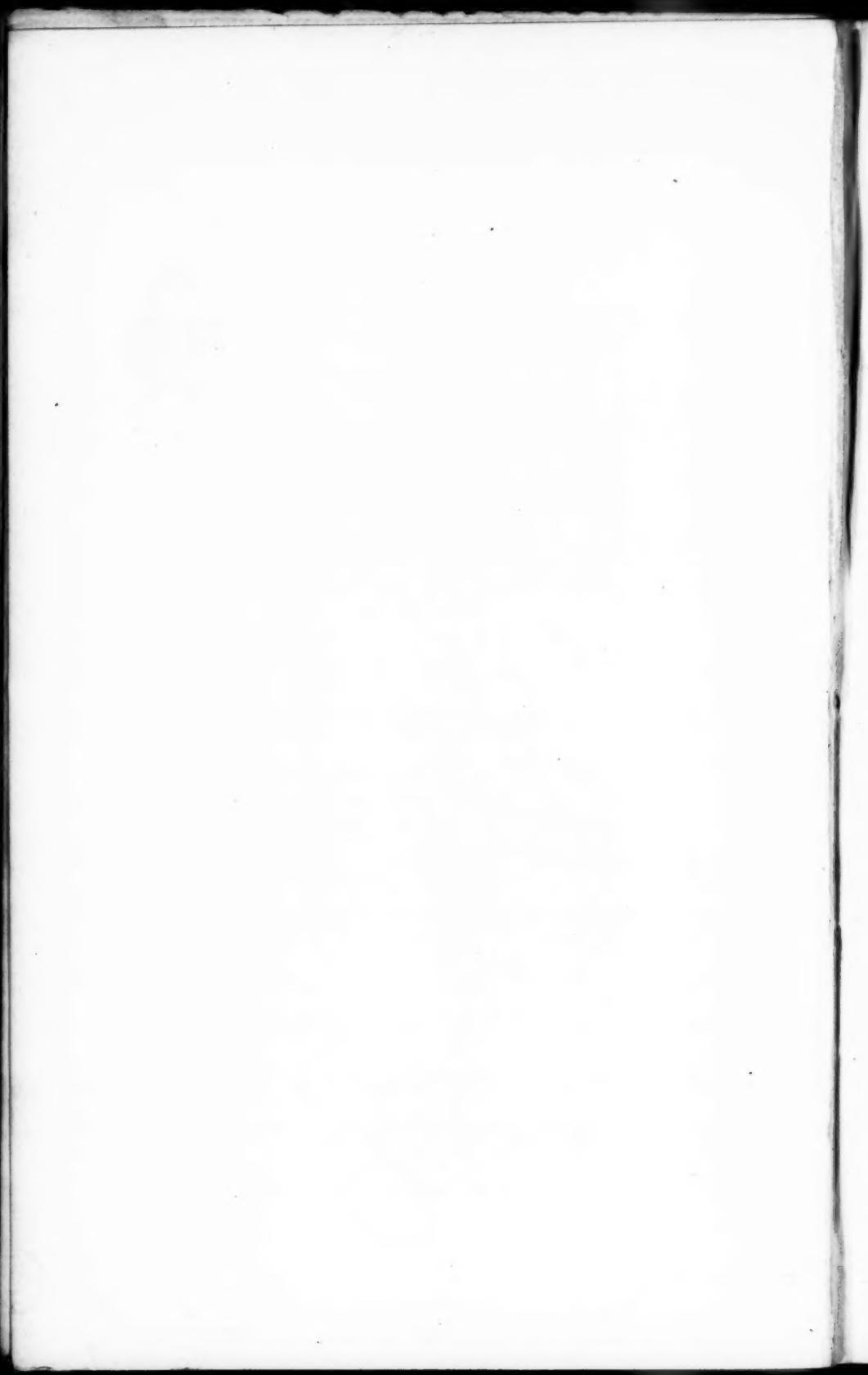
Fig. 1.

Fig. 2.



Fig. 3.

Fig. 4.



ETHNOLOGY OF EGYPTIAN SUDÁN.

By Prof. A. H. KEANE, B.A.

THE decline of Christian and expansion of Muhammadan influences in many parts of North Africa in recent times are curiously illustrated by the fate of the terms *Nigritia*, *Negro-land*, which in modern geographical nomenclature have been superseded by the synonymous Arabic word *Sudán*, or, more fully, *Beled-es-Sudán*, "Land of the Blacks." This expression is properly applied to the whole region lying between the Atlantic and Red Sea, and stretching from the Sahara and Egypt towards the Equator. It comprises three physically distinct divisions, West, Central, and East Sudán, draining respectively through the Niger, Senegambia, and some smaller coast streams to the Atlantic, through the Shary and Komadugu to the Tsad depression, through the Nile to the Mediterranean. Ethnically it is regarded by Lepsius¹ as a land of transition between the Hamites of North, and the Negroes of South Africa, the only indigenous elements recognised by him in the Dark Continent. As G. A. Krause,² their most recent observer, is inclined to group the Fulahs with the Hamites, this view may be accepted as fairly representing the actual conditions in West and Central Sudán.

But in East Sudán, which here alone concerns us, the relations are far more complex. Since its incorporation in the possessions of the Khedive, this region is commonly known as Egyptian Sudán, and although official documents recognise the presence of two peoples only, the Arabs and Negroes,³ it is really the converging point of nearly all the African races. The salient geographical feature of the land is its great artery, the Nile, along whose main sections are roughly distributed the chief divisions of the inhabitants. Thus in the extreme south the Somerset Nile, connecting Lakes Victoria and Albert Nyanza, flows nearly altogether through BANTU territory. The Bahr-el-Jebel, that is, the section between Lake Albert and the Sobat confluence, is essentially NEGRO domain. The White Nile proper, that is, the section between the Sobat and Blue Nile confluences, as well as the main stream thence northwards to Dongola, is occupied on its left bank almost exclusively by SEMITES, on its right partly by Semites, partly by HAMITES. From Dongola to Asuan on the Egyptian frontier, the narrow valley hemmed in between the escarpments of the Libyan and Arabian Deserts, is held, with one or two slight interruptions, by NUBIANS. Then the whole region east of this valley, as far

as the Red Sea, and from Abyssinia to Egypt, belongs to the Hamites, whose territory, with one interruption above Massawah, also stretches between the Abyssinian highlands and the coast round to Cape Gardafui, and thence southwards to the Equator. The arid wastes and steppes west of the Nile are held entirely by Semite nomads, while in the outlying provinces of Kordofan and Dar-Fur, Semites, Nubians, Negroes, and, in the extreme west, even Hamites and Fulahs, are diversely intermingled. Grouped along the course of the great artery we thus find Bantus and Negroes in the south, Semites and Hamites in the centre, Nubians in the north.

I. THE BANTUS.

The Bantus are represented mainly by the Wa-ganda and Wa-nyoro of the native states of U-ganda and U-nyoro, lying north and west of Lake Victoria. Although officially included in the Egyptian province of the "Equator" (Hat-el-Istwa), they have never been reduced, hence lie rather beyond the scope of the present inquiry. Here it will suffice to remark that they occupy the widest range of any people in Africa, being in almost exclusive possession of the southern half of the continent. At some points they even encroach four or five degrees of latitude north of the Equator, while their territory is limited in the extreme south and south-west by a considerable enclave occupied by the Hottentots and Bushmen. At the same time the Bantus themselves have no ethnical coherency, and it seems impossible to recognise a distinct Bantu type in an anthropological sense. They are essentially Negroid rather than Negro peoples, presenting every shade of transition, from the pure Negro of Guinea and the Sudán, to the pure Hamite and Semite of the Middle Nile and north-east coast. Between these two extremes they oscillate in endless variety, offering nowhere any stable physical features, and bound together only by their common Bantu speech. Hence, as I have elsewhere remarked,⁴ the expression Bantu, intelligible in a linguistic sense, has no definite ethnological meaning. But for the fact that most of the peoples occupying the southern half of the continent speak dialects of a common mother-tongue, no anthropologist would ever have thought of grouping them together, as forming a separate division of mankind. Bantu thus corresponds to the analogous terms Aryan, Finno-Tatar, Malayo-Polynesian, Athabascan, in other regions of the globe, terms which have their proper place rather in philological than in anthropological writings.

II. THE NEGROES.

Numerically the Negro is by far the most important element in Egyptian Sudán. It is in almost undisturbed possession, not only of the main stream from the great lakes to and beyond the Sobat junction, but also of the Sobat valley itself, and of the countless headwaters of the White Nile converging from the west and south-west at Lake No above the Sobat junction. Within this area is probably concentrated one-half of the population of the whole Nile basin, from the equatorial lakes to the Mediterranean, a population which has been roughly estimated at about forty millions. Here are several large and powerful Negro nations, some still enjoying political autonomy, such as the Zandeh (Nyam-Nyam), the Mittu, and the Monbuttu, who occupy the low water-parting between the Nile, Congo, and Tsad basins, some brought within the limits of the Khedive's possessions, such as the Bari and Nuer of the Bahr-el-Jebel, the Bongo (Dor), Rol, and Krej of the western affluents of the White Nile, the Funj of Senaar, and the Shilluks and Dinkas about the Sobat confluence. The most numerous and widespread are the Zandeh, the eastern portion of whose territory has alone been explored. They are divided into several independent states, stretching from the Bahr-el-Jebel half across the continent, probably to the territory of the Fans in the far West.

Of the reduced nations, the Shilluks and Dinkas are by far the most important. The Shilluks appear to be of the same stock as the Funj of Senaar, who by fusion with the Arabs formed a powerful kingdom, which in the last century extended northwards beyond the Atbara confluence. Of the Dinkas, who number several millions, as many as twenty-five distinct tribes are mentioned by D. G. Beltrame,⁵ who has resided several years amongst the native communities of the White Nile.

Although grouped as Negroes proper, very few of these Nilotic peoples present the ideal type of the Blacks, such as we find it amongst the Ashantis and other inhabitants of Upper Guinea. The complexion is in general less black, the nose less flat, the lips less protruding, the hair less woolly, the dolichocephaly and prognathism less marked—in a word, the salient features of the Negro race less prominent than elsewhere. Apart from the more minute shades of transition due to diverse intermingling with the Hamites and Semites,⁶ two distinct types may be plainly distinguished—one black and long-headed (Shilluk, Dinka, Nuer, Mittu), the other reddish or ruddy brown and short-headed (Bongo, Zandeh, &c.). The complexion of the latter may possibly be due to the properties of the red

earth prevalent in their districts.⁷ But no theory has been advanced to account for their brachycephaly, which is all the more difficult to explain, inasmuch as it is characteristic neither of the aboriginal Negro, nor of the intruding Hamite and Semite elements.

Schweinfurth tells us that the Bongos are "hardly removed from the lowest grade of brachycephaly" (*op. cit.*, i, 263), and the same is largely true of the Zandeh. But this feature appears to be altogether far more general amongst the Negro races than is usually supposed. Of the eighteen skulls from Equatorial Africa in the Barnard Davis collection (now in the museum of the College of Surgeons, London), as many as four are distinctly round-headed. Craniology thus fails in Negroland as it does in so many other regions, as a constant factor in determining racial types.

The Nilotc races appear to form a connecting link between those of Baghirmi in the Tsad basin, and the non-Bantu peoples between the Kilima-Njaro highlands and the east side of the Victoria Nyanza, who have been recently visited by the Rev. T. Wakefield and Mr. Thomson. The Wa-Kavirondo nation of this region are allied in speech to the Shilluks and the Yambu of the Sobat valley.⁸ The language of their neighbours, the Oigob (Masai), also presents a remarkable peculiarity in the presence of grammatical gender, which it has in common with all the dialects of the Nilotc Negroes, except the Dinka.⁹ This point is of great philological interest, grammatical gender being a feature hitherto supposed to be restricted to the three inflecting families (Aryan, Semitic, and Hamitic), besides the Hottentot by Lepsius partly on this ground affiliated to the Hamitic. In Oigob gender, represented by *l* masculine, and *n* feminine, is fully developed. Thus: *ol* = he, that man; *il* = those men; *en*, *eng* = she; *ing* = those women; *el-e* = this man; *en-a* = this woman; with which compare the Bari: *lo* = this man; *na* = this woman; the Bongo: *bah* = he; *hoh* = she; and the Shilluk: *nenno* = he; *náno* = she. Lepsius, however, is inclined to regard the so-called gender particles of the Oigob simply as "class prefixes" analogous to those of the Bantu system. They certainly seem to indicate, besides sex, the qualities of strength, vigour, courage (masculine), or else anything soft, effeminate, weak or delicate (feminine). Thus the Masai call themselves *il Oigob* = "the men," using the masculine particle, whereas their Wa-Kwafi neighbours are stigmatised with the feminine particle, as *im-Barawúio*, plural *em-Barawúi*, implying weakness or effeminacy. It is also noteworthy that, as with the Bantu prefixes, the masculine and feminine articles are repeated in a more or less modified form,

both before the noun and its adjective. Thus: *ol-doeno o-ibor* = the-mountain the-white (masculine); *en-anga na-ibor* = the-dress the-white (feminine). These forms are most instructive as probably supplying the crude beginning of the highly developed alliterative Bantu system on the one hand, and on the other those of true grammatical gender as fully elaborated in the higher orders of inflecting speech. Compare, for instance, with the foregoing examples, the Zulu-Kafir: *in-Kose en-Kulu* = the-chief the-great; and the Latin: *domin-a me-a* = lady-the my-the, where the parallelism between the respective initial and final "euphonic concords" is obvious. Here also we see how the different morphological orders of speech merge imperceptibly one in the other, and how groundless is the new philological doctrine that these several orders are definitely fixed, and, like Cuvier's animal and vegetable species, incapable of further transformation.

Although Islám has made considerable progress, especially amongst the Funj of Senaar, the Shilluks, Dinkas, and other Nilotic Negro tribes, the bulk of the people are still practically nature-worshippers. Witchcraft continues to flourish amongst the Equatorial tribes, and important events are almost everywhere attended by sanguinary rites. When preparing for battle the "medicine-man" flays an infant and places the bleeding victim on the war-path to be trampled by the warriors marching to victory. Cannibalism also, in some of its most repulsive forms, prevails amongst the Nyam-Nyam, who barter in human fat as a universal staple of trade, and amongst the Monbuttu who cure for future use the bodies of the slain in battle, and "drive their prisoners before them, as butchers drive sheep to the shambles, and these are only reserved to fall victims on a later day to their horrible and sickly greediness."¹⁰ Yet many of these peoples are skilled agriculturists, and cultivate some of the useful industries, such as iron smelting and casting, weaving and pottery, with great success. The form and ornamental designs of their utensils display real artistic taste, while the temper of their iron implements is often superior to that of the imported European hardware. Here again the observation has been made, that the tribes most addicted to cannibalism also excel in mental qualities and physical energy. Nor are they strangers to the finer feelings of human nature, and above all the surrounding peoples the Zandeh anthropophagists are distinguished by their regard and devotion for the weaker sex.

THE SEMITES.

Of this division of the Caucasic stock two branches are represented in North-East Africa: 1. The Yoktanides, or Himyarites,

from prehistoric times, mainly in the Abyssinian highlands beyond the Egyptian frontier—Tigré, Amhara, Bogos,¹¹ and others speaking more or less corrupt dialects of the Gheez or old Himyaritic language of South Arabia. 2. The Ismaelites, or Arabs proper, a few probably from prehistoric times, especially in Senaar; but the great majority since the Muhammadan invasion in the seventh century, chiefly in the steppe-lands west of the Nile from the Sobat confluence northwards to Dongola. Some of the early arrivals, such as the Jowabere (جوابرة) and El Gharbiye (الغربيي), appear to have settled in the Nile Valley south of Egypt, where they became assimilated in speech to the surrounding Nubian population. Many others moved westwards through Kordofan and Dar-Fur to Wadai and the Tsad basin, and, speaking generally, no part of North and North-East Africa except the Abyssinian uplands can be said to be entirely free from the Arab element.

Unfortunately this is also the disturbing element, but for the presence of which there would be no fanaticism, no slave-dealers, no Mahdis, no “Egyptian question,” to confound the councils of European statesmanship. Proud, ignorant, bigoted, and insolent, these Arab tribes “are for the most part nomads or wanderers, each within certain well-known limits. All are large owners of cattle, camels, horses, and slaves. These last, along with the Arab women generally cultivate some fields of dura, or corn, sufficient for the wants of the tribe. The Arab himself would consider it a disgrace to practise any manual labour. He is essentially a hunter, a robber, and a warrior, and, after caring for his cattle, devotes all his energies to slave-hunting and war.”¹²

Some of these Arab tribes are very numerous and powerful. They command great influence amongst the surrounding populations, and are often in a position to defy the supreme authority, or compel it to accept their conditions in the administration of Eastern Sudán. The most important are the Sheyyeh, Robabat, Jalin, and Kababish, between Dongola and Khartum; the Baqqára,¹³ thence southwards nearly to the Sobat confluence; the Homran, Rekhabin, and Alawin of Senaar; the Hamr, El-Homr, Mahâmid, and Habanieh, of Kordofan and Dar-Fur. In general, the Semitic type is fairly well preserved, although the Sheyyeh and some others are distinguished by a dark, almost black, complexion. Traces of intermixture with the Negroes are also evident in many districts, while complete fusion of the two elements seems to have taken place in parts of Senaar and Nubia. In religion all alike are zealous Muhammadans, to whom some system of domestic slavery seems almost indispen-

sable. Hence even were the export of slaves to Egypt and Arabia suppressed, the institution would still survive in a mitigated form in the interior of the country.

THE HAMITES.

As common members of the Caucasic family, the Hamites must be regarded as remote kinsmen of the Semites. But while the latter are comparatively recent intruders from Arabia, the former constitute the true indigenous element in North Africa. In Egyptian Sudán they are found both west and east of the Nile. In the west, however, they are represented only by the Zoghâwa, Baele, and one or two other members of the Tibu group settled chiefly in the north-western districts of Dar-Fur.

The true affinities of the Tibus, long a subject of discussion among anthropologists, may now be determined in the light of the fresh materials recently brought to Europe by Dr. Nachtigal, and partly published in his monumental work, "Sahara und Sudán."¹⁴ The Tibu domain comprises the whole of East Sahara from about 12° E. longitude to the Egyptian frontier, and from Fezzan southwards to Kanem, Wadai, and Dar-Fur. There are two main branches: 1. The Teda, or Northern Tibus, possibly to be identified with the Tedamansii, a tribe of Garamantes placed by Ptolemy in Tripolitana; 2. The Daza, or Southern Tibus, through whom they gradually merge southwards in the Kanembu, Kanuri, Zoghâwa, Baele, and other Negro or Negroid peoples of Central and Eastern Sudán. The Tibu language follows precisely the same course, passing from the Northern and primitive Téda through the more highly developed Daza to the mixed Kanuri and other forms in the Tsad basin.

But the physical and linguistic features revolve, so to say, in different planes, implying apparent antagonism between the ethnical and philological conditions. Both are found in their purest and most original state amongst the Northern Tedas, a point that has been clearly established by Nachtigal. But while the Teda physical type is not to be distinguished from that of the neighbouring Imoshagh or Tuarik (Berber Hamites) of the Western Sahara, the Teda language shows no affinity either with the Hamitic or the Negro groups. It stands entirely apart, constituting the nucleus of a widespread linguistic family with extensive ramifications in Dar-Fur, Wadai, Kanem, Bornu, Baghirmi, and generally throughout Central Sudán. In this region it appears to have been profoundly affected by Negro influences; but no such influences can be detected in the Tibesti uplands, probably the cradle of the Tibu race and the centre of dispersion of the Tibu language.

It follows that the Tibus must be regarded as a branch of the Hamitic stock, who, during their long isolation in Tibesti, have had time to develop an independent idiom no longer traceable to a common Tibu-Berber source. A notable feature of this idiom is the absence of grammatical gender, placing it even on a lower level than many Negro tongues of the Upper Nile and Kilima-Njaro regions. It appears, however, to supply what may be called the "raw material," out of which gender has been elaborated in the Hamitic languages. Thus *o* seems to be characteristic of masculine, *d* or *t* of feminine terms, as in *o-mri* = man; *a-di* = woman. With this feminine dental may be compared the Berber *t*, which is both pre- and post-fixed, as in *akli* = negro; *taklit* = negress.

The word *omri* may serve in a way to connect the Tibu Hamites with the Galla, a chief branch of the Eastern Hamites, who also call themselves *Oromo*, Orma, Ormu = men. To these Eastern Hamites, who skirt the Indian Ocean and the Red Sea from the Equator to Egypt, and of whom the ancient Egyptians themselves were a branch, the vague terms Kushite and Ethiopian are frequently applied. By the intervening Abyssinian highlands they are divided into a southern and a northern group, the chief branches of the former being the Afars (Dankali), the Somali, Galla, Kaffa,¹⁵ and outlying Wa-Huma; of the latter the Saho, Bogos, or Bilin (?), Beja, or Bishari; the old Egyptians, modern Kopts, and Fellahin, besides the Agau and some other scattered communities in Abyssinia.

The Wa-Huma, to whom the attention of ethnologists has scarcely yet been seriously directed, present some points of great anthropological interest, probably affording a solution of the difficulties connected with the constituent elements of the Bantu races in East Central Africa. Speke had already observed that the chiefs of the Bantu nations about the great lakes were always Wa-Huma, a pastoral people evidently of Galla stock, and originally immigrants from the Galla country. Since then it has been ascertained that several Wa-Huma communities live interspersed amongst the mixed Bantu nations of the lacustrine plateau, and J. M. Schuver was recently informed that the Negro inhabitants of the Afilo country were governed by a Galla aristocracy.¹⁶

From these and other indications it seems highly probable that in point of fact the Bantu peoples are fundamentally Negroes in diverse proportions affected by Wa-Huma or Galla, that is, Hamitic elements. The Wa-Huma, who, under the name of Wa-Tusi,¹⁷ are found as far south as the U-Nyamezi country, are by recent observers unanimously described as a very fine race, with oval face, straight nose, small mouth, and

generally speaking regular Caucasie features. Such a type is found everywhere cropping out amid the surrounding Negroid populations throughout the southern half of the continent, and the conclusion seems irresistible that it should be referred to these Wa-Huma or Hamitic Gallas, probably for ages advancing as conquerors from the north-east into the heart of the continent.

No distinct mention is made of the Wa-Huma speech. It is known, however, to differ from that of the Bantus proper; and when we hear that the late King M'tesa of U-Ganda spoke Galla as his mother-tongue, and was proud of his Galla ancestors, little doubt can remain on this point. The Wa-Huma are also distinguished by their intense love both of personal freedom and political autonomy, sentiments which are but feebly developed amongst the true Negro populations. Such is their horror of captivity and a foreign yoke, that those who have failed to maintain their independence are no longer regarded as true Wa-Huma. The very women, who have the misfortune to fall into the hands of the Arab slave-dealers, are looked upon as degraded for ever, and should they escape from bondage, are burnt alive by their own people. Traits of this sort would almost alone suffice to suspect at least a very large infusion of non-Negro blood in the Wa-Huma race. This element we may now trace with some confidence to the Hamites of North-East Africa as its true source.

The Afars, Somali, Galla, and other members of the Southern Hamitic group need not here detain us further. They lie mostly beyond the jurisdiction of the Egyptian Mudirs, and very few of their tribes have hitherto been brought within the sphere of civilising influences. Enough to state in a general way that their languages all belong to the Hamitic connection, forming outlying branches of the great linguistic family from the earliest times diffused throughout the whole of North Africa, and in this region corresponding to the Bantu in the southern half of the continent.

Of the northern group of Ethiopian Hamites by far the most important are the Beja, or Bishari, who have all the greater claim to the consideration of the ethnologist, that their ethnical status has hitherto been persistently ignored alike by British Cabinet Ministers, officials, and newspaper correspondents. They are the unfortunate people, many of whose tribes have recently come into collision with the British forces in the Suakin district, but who continue to be spoken of as "Arabs" by those statesmen who are unable to recognise more than two races in Egyptian Sudán, that is, the Negro and Arab. Thus on February 27th of the present year the Marquis of Hartington telegraphs to General Graham: "Tell them we are not at war

with the *Arabs*, but must disperse force threatening Suakin." And General Graham himself sends a letter "written in Arabic" to the chiefs of the tribes about Trinkitat and Tokar, in which they are again assumed to be "Arabs." We all remember the ignominious fate of that now historical document, which was set up as a target and riddled by bullets, as some dangerous fetish, by those Hamitic followers of Muhammad Osman Dakanah, whose own language, the To-Bedawieh, differs almost as much from Arabic as does that of the British troops itself. All this immediately preceded the sanguinary engagement of El Teb, and it may be asserted with Sir Stafford Northcote, though for reasons different from those implied by him, that "if the position of England had been such as it ought to have been, we should have had none of the slaughter which then took place." In fact, had a moderate amount of attention been paid by our Foreign Office to the true ethnical conditions in Egyptian Sudán, most of the complications might probably have been avoided that have since arisen in that distracted region. But the necessity for a systematic study of ethnology has not yet made itself apparent to the rulers of the most multifarious complexity of tribes and peoples ever entrusted to the charge of a single Administration.

The Bejas are the true autochthonous element in East Nubia, where they occupy the whole of the arid steppe-lands stretching from the Nile to the Red Sea, and from the Abyssinian frontier northwards as far as the parallel of Keneh and Kosseir in Upper Egypt.¹⁸ Their main divisions are the Ababdeh, to be identified with Pliny's Gabadei about the Egyptian frontier, the Hadendoah, Hassanab, and Demilab, along the coastlands, and as far inland as the El-Matre wells on the Suakin-Berber route; the Bishari proper, thence westwards to the Nile; the Amarar and Ashraf north from the Suakin-Berber route, and here and there overlapping the Bishari; the Kamlab, Halenga, and Beni-Amer along the Abyssinian frontier from the Nile to the Red Sea in the order here given.

By Linant Bey (Linant de Bellefonds), one of the most intelligent observers of these peoples, they are described as of European (Caucasic) type, often very handsome, of a bronze, swarthy, or light chocolate complexion, with long, crisp, but not woolly hair, generally falling in ringlets over the shoulders.¹⁹ So also the Macrobes, of the same region, were long ago described by Herodotus (Book III) as "the tallest and finest of men," to whom Cambyses sent envoys from their kindred of Elephantine Island, but failed to reduce. Nevertheless, through long contact with the surrounding African populations the present Bejas show here and there evident traces of Negro blood, conspicuous

especially in the thick lips and broad nose of some of their tribes. On the other hand, the northern or Ababdeh branch have been largely assimilated even in speech to their Arab neighbours and hereditary foes, the Antúni (Ma'azeh) of Upper Egypt.²⁰ All are now more or less zealous Muhammadians, occupied chiefly with camel-breeding and as caravan leaders, governed by hereditary sheikhs, and, like their Hamitic kindred elsewhere, distinguished by their personal bravery and love of freedom.

Beja, the most collective national name, may be traced through the harder Arabic form *Bega*²¹ of the tenth century to the *Búga* (*Βούγαιται*) of the Greek and Axumite (Geez) inscriptions, and thence perhaps to the *Buka* of the hieroglyphic records. These *Βούγαιται* appear to be identical with the *βλέμμυες* (Kopt. Balnemmoui) who are already mentioned by Strabo,²² and who from the third to the sixth century of the new era infested the southern frontiers of Egypt. Often defeated by Aurelian and Probus, they nevertheless so continued to harass these outlying provinces of the empire, that Diocletian was at last induced to withdraw the Roman garrisons from the region of the Cataracts, replacing them by the warlike Nobatæ tribes from the great oasis of Kargey in Upper Egypt.

THE NUBAS.

The just-mentioned Nobatæ of Diocletian are commonly assumed to be the modern Nubians. But, although not yet recognised in British official reports, the Nubian race and name have even a more venerable antiquity than this statement would imply. In a passage quoted in note 22 we find mention already made by Strabo of the *Noûßai*; and in another passage the same writer, who flourished three hundred years before the time of Diocletian, describes these Nuba as "a great nation" dwelling in Libya, that is, Africa, along the left bank of the Nile from Meroe to the bends of the river.²³ The word itself has even been identified by some writers with the land of *Nub* or *Nob*, that is, "Gold," the region about Mount Elbeh on the Red Sea coast over against Jiddah, where the Egyptians worked the precious metal from the remotest times.

But this identification must be rejected since the discovery that the cradle of the Nuba race is not to the east but to the west of the Nile,²⁴ in the Kordofan highlands. The final syllable *fān* of the very word Kordo-fān is explained to mean in the Nuba language *land, country*, thus answering to the Arabic *dār*, as in Dār-Fur = the land of the *Fur* people. Both the Fur and the Kordo, if these latter are identical with the

Kargo of the Jebel-Kargo, are themselves of Nuba stock and speech, and the term Nuba is still current in Kordofan both in an ethnical and a geographical sense, indicating the Jebel-Nuba uplands inhabited by the Nuba tribe. Here, therefore, is the true home of the race, some of whom appear to have migrated northwards some two thousand years ago, settling partly in the Kargey oasis (Diocletian's Nobatæ), partly in the narrow valley of the Nile about Meroe (Strabo's Nubæ).

Since those days there have always been Nubæ, Nobatæ, or Nubians in the Nile Valley, mainly in the region of the Cataracts, and we read that after their removal hither from Kargey the Nobatæ dwelt for some time peacefully with the Blemmyes (Hamitic Bejas). They even made common cause with them against the Romans; but the confederacy was crushed by Maximinus in 451. Then the Bejas withdrew to their old homes in the Arabian desert, while the Nobatæ, embracing Christianity in 545, developed a powerful Christian state in the Nile Valley. Silco, founder of this kingdom of Dongola, as it was called from its capital, bore the title of "King of the Noubads and of all the Ethiopians," that is, of the present Nubian and Beja nations. His empire lasted for 700 years, and was finally overthrown by the Arabs in the thirteenth century, since which time the Nile Nubians have been Muhammadans. They also gradually withdrew to their present limits between Egypt and Old Dongola, the rest of their territory thence to Khartum being occupied by the Sheygyeh, Robabat, Jalin, and other powerful Arab tribes.

There are thus two main divisions of the Nuba race: the Nubas proper of Kordofan, found also dispersedly in Dar-Fur; and the Nile Nubas, commonly called Nubians in European books of travel, but who now call themselves Barabra.²⁵ By the latter the term Nuba has been rejected, and is even regarded as an insult when applied to them by others. The old national name appears to have fallen into discredit in the Nile Valley, where it has become synonymous with "slave," owing to the vast number of slaves supplied for ages by the Nuba populations of Kordofan and Dar-Fur.²⁶ The Nile Nubas themselves supply no slaves to the market. Constituting settled and semi-civilised Muhammadan communities, they are treated on a footing of perfect equality in Egypt, where large numbers are engaged as free labourers, porters, "costermongers," and in various other pursuits. They are a strong, muscular people, essentially agricultural, more warlike and energetic than the Egyptians, whom they also excel in moral qualities. Their Muhammadanism is not of a fanatical type, and although the present Mahdi is a Nubian of Dongola he has found his chief

support not amongst his countrymen, but amongst the more recently converted Negroes, and especially the Arab and Hamite communities of Kordofan and other parts of Eastern Sudán.

There is a marked difference between the physical appearance of the two great branches of the Nuba race. The Nubian (Barabra) type is obviously Negroid, very dark, often almost black, with tumid lips, large black dreamy eyes, dolichocephalic head (73·72 as compared with the normal Negro 73·40, and the old Egyptian 75·58), woolly or strongly frizzled hair. The scant beard is still worn under the chin, like the figures of the Negro fugitives in the battle-pieces sculptured on the walls of the Egyptian temples. But, as amongst all mixed peoples, there are considerable deviations from the normal Nubian standard, some showing affinities to the old Egyptian, as already remarked by Blumenbach, some noted for their fine oval face and regular features, others for their long or slightly crisp hair, and bronze,²⁷ reddish brown, or deep mahogany complexions. In general it may be said with Burkhardt that the nose is less flat, the lips less thick, the cheekbones less prominent, the colour less dark ("of a coppery tinge"), than amongst the true Negros. The Nile Nubians must therefore be regarded as essentially a mixed race, presenting every shade of transition between the original Nuba type and the various Hamitic and Semitic elements, with which they have intermingled in the Nile Valley.

The original Nuba type itself must be studied in the Kordofan highlands, where it persists in its greatest purity. The Kordofan Nuba are unanimously described by Russeger, Petherick, Lepsius, and other intelligent observers, as emphatically a Negro race. "Negerstämme," "Negerfolk," "Negroes," "Niggers," are the unqualified terms applied to them in all books of travel, so that there can be no doubt at all on this point.²⁸ Its importance is obvious, for it settles the question of the true affinities of the Nile Nubians, about which so much controversy has prevailed.

It is remarkable, however, that Lepsius traces the Nile Nubians, not to the Kordofan Nubas, but directly to the Uaua Negroes of the Nile Valley. These Uaua are the oldest people, of whom there is any record, in this region. Their name occurs on a tomb at Memphis dating from the time of Pepi, sixth dynasty, 2500 B.C. They are again mentioned in the Wadi-Halfa inscription amongst the tribes reduced by User-tesen II, of the twelfth dynasty. Allusion is also made to the *Uauat* country, and in many subsequent inscriptions the Uaua figure largely as at the head of all the Negro races beyond the Egyptian frontier. In fact, the word became the conventional

or stereotyped name of the Nile Negroes generally down to the time of the Ptolemies, after which it suddenly disappears from historic records.

This disappearance has not been explained. But it was probably due to the already mentioned irruption of the Bugaitæ (Bejas), by whom the Uaua were reduced, if not exterminated. There is consequently no necessary connection between them and the Nubians, whose more recent migration from Kordofan to the Nile Valley may be regarded as clearly established.

Whatever doubt might remain on this point is removed by a consideration of the linguistic argument. In his masterly treatise on the Nubian language quoted further back, Lepsius himself has shown that the speech of both branches of the Nuba race is identical, presenting merely some slight dialectic varieties, easily explained by the length of time that has elapsed since the migration. The structure is the same, and the subjoined list of a few common words in the Dongolawi of the Nile and in four Kordofan dialects shows that the vocabulary also is essentially one:—

English.	Dongolawi (Nile).	Jebel Kargo.	Jebel Kolaji.	Jebel Nuba.	Jebel Kulfán.
Mouth....	agil	ogl	aul	aljo	awol
Foot.....	gedem	kogodi	kuddo	koördö	ket
Cow.....	ti	ti	eh	ti	teh
Fire.....	ig	ik	eka	?	ika
One	weri	ber	bera	ber	ber
Two.....	owi	orre	ora	ora	ora
Three	toski	toje	toje	toju	toju

It is incredible that the speech of the Uaua Negroes and Kordofan Nubas, if originally the same, could have maintained its identity with such slight changes as these for a period of nearly 4,400 years—that is, from the time of Pepi (2500 B.C.), when mention first occurs of the Uaua. It seems safe to conclude that, while the identity of the Nile and Kordofan Nubas is established, neither branch has any obvious or necessary connection with the extinct Uaua of the Egyptian records.

Independently of this consideration the Nubian language, first clearly elucidated by Lepsius, presents some points of interest both to the philologist and ethnologist. Its Negro character is shown in its phonology, in the complete lack of grammatical gender, and in some structural peculiarities. Such is the infix *j* inserted between the verbal root and the plural pronominal object, as in *ai tokki-j-ir* = I shake them. As in Bantu, the verbal conjugation is highly developed, presenting

such a multiplicity of forms that in Lepsius' Grammar the complete paradigm of a single verb fills as many as 110 pages. The Nubian language never appears to have been cultivated, or even committed to writing.²⁹ Hence it is not likely to afford the key, as some have suggested, to the numerous undeciphered inscriptions occurring along the banks of the Nile as far south as Senaar.

It enables us, however, to dispose of the so-called "Nuba-Fulah" family, originally constituted of heterogeneous elements by Frederick Müller, and generally accepted by anthropologists on the authority of that distinguished ethnologist. We have already seen at the outset that the Fulahs are a non-Negro race, most probably allied to the western Hamites of the Sahara. The Fulah speech, also, appears from Krause's Grammar to be a non-Negro language, betraying not the remotest resemblance to the Nuba. Thus the Nubas are of Negro stock and speech, and so the "Nuba-Fulah" family is dissolved, its *disjecta membra* finding each its place amongst its own kindred.

Yet another point. In the light of these new revelations how fares it with Lepsius' theory, which reduces the indigenous elements in Africa to two racial and linguistic stocks, the Hamitic in the north and the Negro in the south, Sudán thus becoming an intermediate zone of transition and intermingling between these two types? On the face of it the theory seems, so to say, too simple and symmetrical to hold good. Nature loves law and order, but in the biological world seems averse from such mathematical regularity. Nor is it found in the Dark Continent, where, besides the Hamite and Negro, account must be taken of the Hottentot, Bushman, Pigmy (Akka, Obongo, &c.), and possibly other not yet discovered autochthonous elements.

But it is on its linguistic side that the scheme of Lepsius fails most signally. In Egyptian Sudán alone we find at least a dozen languages which can neither be traced to a common source nor in any way affiliated to Lepsius' typical orders of speech, the Hamitic and the Bantu. Such are the Tibu (Zoghawah and Baele dialects) the Fulah of Dar-Fur, the Nuba, Basé, Dinka, Bari, Shilluk, Zandeh, Nuer, and others in the Zeriba region of the Upper Nile and in the Sobat valley. Anthropology recognises only a very limited number of physical types in the whole world, and even these are for the monogenist mere varieties of a single species. But philology recognises, not a limited, but almost an unlimited number of linguistic types, true types often differing generically and not merely specifically, and utterly incapable of being reduced even to one order of speech.³⁰ Hence in other regions of the globe we everywhere find a very large number of stock

languages, seventy for instance in North America, distributed amongst just two or three stock races. It would be to the last degree surprising and phenomenal, were Africa alone to form an exception to the general rule, that there is no necessary correspondence between ethnical and linguistic groups.

Subjoined are tabulated schemes of all the Eastern Sudanese and contiguous ethnical groups, with their chief subdivisions and geographical position.

I. BANTU GROUP.

<i>Wa-Ganda</i> ..	North-west side Victoria Nyanza, from the Somerset to the Alexandria Nile (Tanguré), the most numerous and powerful Bantu nation in the region of the Great Lakes.
<i>Wa-Nyoro</i> ..	Between Somerset Nile and Albert Nyanza.
<i>Wa-Soga</i> ..	East from the Somerset Nile.
<i>Wa-Gamba</i> ..	East of the Wa-Soga territory; limits undefined.
<i>Wa-Karagwé</i> ..	West side Victoria Nyanza, from the Alexandria Nile southwards to the Wa-Zinza territory.
<i>Wa-Songora</i> ..	West side of Victoria Nyanza between the Wa-Karagwé and the coast.

II. NEGRO GROUP.

<i>Kavirondo</i> ..	East side Victoria Nyanza, dominant from the Wa-Soga territory to the Kerewé Island, south-east corner of the lake.
<i>Kuri</i> ..	Speech appears to be Negro, and akin to Shilluk.
<i>Kara</i> ..	Nanda uplands north of Kavirondo, fierce wild tribes of uncertain affinities.
<i>Masai</i> ..	Kilimanjaro, thence westwards towards Victoria Nyanza; national name Oigob; speech distinctly Negro, akin to the Bari.
<i>Kwasi</i> ..	West of Mount Kenia, north of the Masai territory; classed by Krapf with the Hamitic group, but type seems Negro.
<i>Shefalu</i> ..	North U-Nyoro, akin to the Shilluks.
<i>Madi</i> ..	Between the Lower Somerset Nile and the Madi mountains, and limited westwards by the Bahr-el-Jebel.
<i>Shuli</i> ..	
<i>Laboré</i> ..	Lower Sobat basin.
<i>Janghey</i> ..	
<i>Fallanj</i> ..	Both sides Bahr-el-Jebel, 4°—5° N., limited northwards by the Shir territory.
<i>Niuk</i> ..	About headwaters of the river Welle, beyond the Egyptian frontier.
<i>Bari</i> ..	From south-west frontier Egypt-Sudán for unknown distance westwards; are the Niam-Niam of the Nilotic tribes.
<i>Monbuttu</i> ..	A-Madi Moro district north of Monbuttuland. The Mittu Madi-Kaya call their country Moro, which is not an ethnical Abbakah but a geographical name (Schweinfurth, "Heart Luba of Africa," I, p. 403).
<i>Bongo (Dor)</i> ..	
<i>Shir</i>	Upper course Tondy and Jur rivers, thence to Zandeh frontier. Bahr-el-Jebel 5°—6° N., between the Dinka and Bari territories.

<i>Rol</i> ..	..	Tribes of uncertain affinity along Rol river, east of the Bongo and Mittu.
<i>Agar</i> ..	..
<i>Sofi</i> ..	..
<i>Lehsí</i> ..	..
<i>Nuer</i> ..	{	Byor } Along lower course Bahr-el-Jebel, 7°—9° N. Ror }
<i>Dinka</i> ..	{	Abuyo, Agar, Ajak, Aliab, Arol, Atwot, Awan, Bor, Donjol, Jur, Gok, Rish }
		Along Bahr-el-Jebel, and right bank White Nile, 6°—12° N. Largest of all the Nilotic Negro tribes (Beltrami).
<i>Shilluk</i> ..	{	Kwati, Dyakin, Kwati, Dyakin, } Left bank Bahr-el-Jebel and White Nile, Dyok, Roah 9°—12° N.
<i>Dwür</i> ..	..
<i>Ayarr</i> ..	..
<i>Mok</i> ..	..
<i>Tondý</i> ..	..
<i>Bót</i> ..	..
<i>Ayell</i> ..	..
<i>Takruri</i> ..	..	Gallibat district, Abyssinian frontier, originally from Dar-Fur (James's "Wild Tribes of the Sudán," p. 30).
<i>Funj</i> ..	..	The dominant race in Senaar, supposed to be of Shilluk stock, but now largely mixed with the Arabs of that region.
<i>Krej</i> ..	..
<i>Fertit</i> ..	{	About headwaters of the Bahr-el-Arab, beyond Egyptian frontier.

III. NUBA GROUP.

NUBAS PROPER	<i>Nuba</i> ..	..	Kordofan, chiefly in central and southern districts, 11°—13° N.	
	<i>Kargo</i> ..	..	
	<i>Kulfan</i> ..	..	
	<i>Kolaji</i> ..	..	
	<i>Tumali</i> ..	..	
WESTERN NUBAS	<i>Fur</i> ..	..	The dominant race in Dar-Fur, to which country it gives its name; speech appears to be akin to Nuba.	
		<i>Kunjara</i>	..	Dar-Fur and Kordofan; a branch of the Fur, whose language they still speak.
		<i>Mattocki</i> (Kenus)	..	From Asuan (First Cataract) to Sebu and Wadi-el-Arab.
		<i>Saidokki</i>	..	
		<i>Mahai</i> , or <i>Marisi</i>)	..	From Korosko to Wadi-Halfa (Second Cataract).
NILE NUBAS ("NUBIANS," "BARABRA")	<i>Dongolawi</i>	..	Province Dongola, from Wadi-Halfa to Jebel Deja near Meroe, where the Sheygyeh Arab territory begins.	
	<i>Danagèle</i>	..	Recent Nubian immigrants into Kordofan and Dar-Fur; chiefly from Dongola, whence the name Danagèle. Most of them now speak Arabic (Munziger).	

IV. SEMITIC GROUP.

(a) HIMYARITIC OR ABYSSINIAN BRANCH³¹	<i>Dahalaki</i>	..	Great Dahalak Island near Massawa.
	<i>Massuai</i>	..	The mixed population of Massawa, of Tigre speech.
	<i>Hotumlu</i>	..	
	<i>Karneshim</i>	..	
	<i>Az-Shuma</i>	..	
	<i>Dokono</i>	..	Mudun (Samhar) coast district about Massawa and as far as Aqiq.

<p style="text-align: center;"><i>(a)</i> HIMYARITIC OR ABYSSINIAN BRANCH³¹ (continued)</p>	<table border="0" style="width: 100%;"> <tr> <td style="width: 10%;"><i>Habab</i> ..</td><td style="width: 10%;">..</td><td rowspan="7" style="font-size: small; vertical-align: middle; padding-left: 10px;">Anseba province, north - east frontier of Abyssinia inland from Mudun.</td></tr> <tr> <td><i>Bejuk</i> ..</td><td>..</td></tr> <tr> <td><i>Mensa</i> ..</td><td>..</td></tr> <tr> <td><i>Bogos (Bilin)</i>³² ..</td><td>..</td></tr> <tr> <td><i>Takue</i> ..</td><td>..</td></tr> <tr> <td><i>Marea</i> ..</td><td>..</td></tr> <tr> <td><i>Algeden</i> ..</td><td>..</td></tr> </table>	<i>Habab</i>	Anseba province, north - east frontier of Abyssinia inland from Mudun.	<i>Bejuk</i>	<i>Mensa</i>	<i>Bogos (Bilin)</i> ³²	<i>Takue</i>	<i>Marea</i>	<i>Algeden</i>
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SOUTH ETHIOPIAN BRANCH (continued)	OROMO OR GALLA (continued)	Mecha	South of Gojam.
		Raya	West of Zebul.
		Asabo	
		Lango	Somerset Nile between Foweira and Magungo.
		Wa-Huma	Intermingled with the Bantu populations of the eastern equatorial regions.
		Wa-Tusi	
		Sidama	Kaffaland, south-west of Shoá, hitherto wrongly grouped with the Nubas. ³⁵
		Isa	
		Isa-Ishaai	Between Zeilah, Harrar, and Berbera.
		Modoba	
CENTRAL ETHIOPIAN BRANCH	AFAR (ADAL OR DANAKIL)	Gudabisri	
		Habr-Awal	
		Habr-Gerhajis	Uplands south of Berbera.
		Gadohursi	
		Dalbahantu	East of Berbera to the Indian Ocean.
		Warsingali	
		Mijjerthain	
		Debnet	Coastlands between Abyssinia and the Red Sea, from Zula Bay to Strait of Bab-el-Mandeb. ³⁶
		Asoba	
		Assa-Imara	
NORTH ETHIOPIAN BRANCH (BEJA DIVISION)	Khamir Agau Agaumeder Khamant Saho, or Shoho Hadendoa Bishari Beni-Amer Halenga Amarar Ababdeh	Sidi-Habura	
		Galeila	Abyssinia.
		Lasta district	
		Quara district	
		Gondar district	
		North-east frontier, Abyssinia.	
		Between Suakin and the Nile, thence southwards to the Abyssinian frontier.	
		Along north frontier, Abyssinia ; both largely affected by Semitic elements, and often wrongly classed with the Abyssinian Himyarites. ³⁷	
		Along the coast from Suakin northwards to Ras-Benass and thence inland.	
		Upper Egypt and Arabian Desert, from Koseir southwards to the neighbourhood of Wadi-Halifa ; partly assimilated to the Arab tribes on their northern frontier.	

VI. UNCLASSIFIED GROUPS.

Barea	About middle course Mareb and headwaters of the Barka, north frontier Abyssinia ; closely related in habits, type, &c., but of different speech (Nere-bena and Bazena-aura) ; apparently the true aborigines of Abyssinia. ³⁸
Basé or Kunáma	
Birkit	
Masalit	Dar-Fur, chiefly towards Wadai frontier ; of doubtful affinities (Barth, III, p. 539).
Abu-Sarib	
Tala	
Bakka	
Assiri	The aborigines of Kordofan, apparently extinct or absorbed in the Tegelé and Nubas.

<i>Tegelé</i>	.. }	Large nation south Kordofan, usually classed as Nubas, but quite distinct. ³⁹
<i>Tekelé</i>	.. }	In thirty villages, south and east of Mount Kordofan; said to be of Funj origin.
<i>Qadeyat</i>	..	In thirty villages, south and east of Mount Kordofan; said to be of Funj origin.
<i>Musabat</i>	..	Obeid district, Kordofan; claim descent from the Kunjara of Dar-Fur, where some are still found; all now speak Arabic exclusively.
<i>Muserbat</i>	..	Dar-Fur, where some are still found; all now speak Arabic exclusively.

NOTES.

¹ "Nubische Grammatik," Einleitung.

² "Im Gegentheil drängen uns diese Thatsachen zu dem Schlusse hin, dass auf der eine Seite die fulische Sprache in ihrer ersten Anlage, sowie die hamito-semitischen Sprachen, und dann auf der andern das fulische Volk, sowie Hamito-Semiten eines und desselben Ursprungs seien. Aus diesem Grunde nennen wir die Fulen die Ur- oder Proto-Hamiten."—*Ein Beitrag zur Kenntniß der Fulischen Sprache* (Leipzig, 1884, p. 11).

³ Thus Lieut.-Colonel Stewart, in his otherwise valuable "Report on the Sudán for 1883": "Besides the main division of the people into Arab and Negro, they are again subdivided into a number of tribes and sub-tribes, some sedentary, and others nomad" (p. 8). These sub-tribes are not further specified; but in what follows all are treated either as Arabs or Negroes.

⁴ "Nature," April 17, 1884, p. 581.

⁵ "Grammatica e Vocabolario della lingua Denka," Rome, 1880, p. 231.

⁶ In Senaar alone the Arabs reckon as many as six gradations between the pure Negro and the Semite: 1. El-Asraf, or yellow; 2. El-Kat Fatalobin, the Abyssinian; 3. El-Akdar, or red; 4. El-Azraq, or blue; 5. El-Ahsdar, or "green"; 6. Abbit, the Nubian.

⁷ Schweinfurth, "Heart of Africa."

⁸ Rev. T. Wakefield, in "Proceedings of the Geographical Society, for December, 1882.

⁹ Lepsius, *op. cit.*, "Einleitung."

¹⁰ Schweinfurth, *op. cit.*, ii, p. 93.

¹¹ The position of the Bogos or Bilfn, who occupy a debatable tract at the north-east corner of Abyssinia on the Egyptian frontier, is somewhat doubtful. Leo Reinisch regards their speech as a Gheee dialect ("Die Bilín Sprache," Vienna, 1882); yet he classes them subsequently with the neighbouring Hamite peoples, as will be seen further on.

¹² Lieut.-Colonel Stewart's "Report on the Sudán for 1883," p. 8.

¹³ The term *Baqqára*, unknown in the Arab national genealogies, has given rise to some misunderstanding. It is not the name of any particular tribe, but an expression applied collectively to all tribes which breed and deal in cattle, in contradistinction to those whose wealth consists in horses and camels. Hence there are Baqqára in many parts of Sudán, although they are chiefly concentrated about the left bank of the White Nile, and further west towards the headstreams of the Bahr-el-Arab (*Baqqára-el-Homr*). The word is derived from بقر = *bagar* = an ox.

¹⁴ Two volumes only have so far appeared (Berlin, 1879, 1881). The remainder, with rich philological data, are anxiously awaited by students of African ethnology.

¹⁵ At Keren in the Bogos country Leo Reinisch tells us that in 1880 he picked up enough of the Kaffa language from three slaves to determine its connection with the Hamitic family. To the same connection he refers the Agaumeder and Khamant of Gondar, and some others on the north frontier of Abyssinia, about whose true affinities some doubt still prevails ("Oesterreichische Monatschr. f. den Orient," March 15, 1884, p. 94).

¹⁶ "Aflo wurde mir vom Lega-König als ein Negerland bezeichnet, welches von einer Galla-Aristokratie beherrscht wird" (Petermann's Mittheilungen, 1883, v, p. 194).

¹⁷ And are no doubt also known by other names. Thus the Wa-Taturu shepherds of U-Kerewé Island in Lake Victoria Nyanza appear to belong to the same connection. They are described by Stanley as "light-coloured, straight, thin-nosed, and thin-lipped," in contrast to their Wa-Kerewé neighbours, "a mixture of the Ethiopic and Negro type." ("Through the Dark Continent," vol. i, p. 251.)

¹⁸ That this region was occupied by the Beja from remote times appears evident from Maerizi, whose account of this people in his "History of Egypt" (end of fourteenth century) is drawn from the Isthakhri (tenth century) and other older records. "Le pays qu' habite ce peuple commence au bourg nommé Kharbah, près duquel est la mine d'émeraudes. Le pays des Bedjas se termine aux premières frontières de l'Abyssinie. Ce peuple habite l'intérieur de la presqu'île d'Egypte jusqu'aux bords de la mer, du côté qui regarde les îles de Souaken, de Baza (Massáwah), et de Dahlak." (Quatremère's translation, in "Mémoires sur l'Egypte," 1811, ii, p. 135.)

¹⁹ "L'Etbaye, pays habité par les Bicharieh" (Paris, 1868).

²⁰ These Ababdeh are very widespread, stretching from Keneh southwards to the Second Cataract at Wadi-Halfa, where they meet the Kensi Nubiāns on the west, and the Bishari on the east. Their chief tribes, some of which also appear to speak Nubian, are the Nemrāb, Gawalieh, Shawáhir (Khawáhil), Abudein, Meleikab, Tokára, and Oshabáb. Russeger ("Reise," ii, Part 3, p. 193) estimates their number at about 40,000, nearly equally distributed between Egypt and Nubia.

²¹ The Arabic **ت**, now generally pronounced *j*, was originally hard, like the Hebrew **ת**, as we see in the geographical term *Nejd*, by the local tribes still pronounced *Negd*. Hence *Bega* = *Beja*.

²² Λοιπὰ δὲ τὰ πρὸς νότον, Τρογλοδύται, βλέμμενοι, καὶ Νοῦβαι καὶ Μεγάθαροι οἱ ὑπὲρ Συῆνης Αἰθίοπες. (Book 17, § 53.)

²³ Εἴς ἀριστερῶν δὲ ρῦσεως τοῦ Νεῖλου Νοῦβαι κατοικοῦσιν εν τῇ Λιβύῃ, μέγα θνοῖ, &c. (Book 17, p. 1117, Oxford ed., 1807.)

²⁴ This is also confirmed by Ptolemy, who (iv, 8) speaks of the Nubæ as "maxime occidentales Avalitarum."

²⁵ Plural of Berberi, that is, people of Berber, although at present they do not reach so far up the Nile as that town. But during the eighteenth century this place acquired considerable influence as capital of a large Nubian state tributary to the Funj Kings of Senaar. It is still an important station on the Nile just below the Atbara confluence at the point where the river approaches nearest to the Red Sea coast at Suakin. It may here be mentioned that the term *Barabra* is referred by some authorities, not to the town of Berber, but to the *Barabara* people, whose name occurs amongst the 113 tribes recorded in the inscription on a gateway of Thutmes, by whom they were reduced about 1700 B.C. This identification seems to some extent confirmed by the generic name *Kens* applied in the same inscription to many of these "Ethiopian tribes," and still surviving in the form of Kenus (plural of Kensi), the name of the northern division of the Nubian (Barabra) people towards the Egyptian frontier. It is further strengthened by a later inscription of Ramses II in Karnak (1400 B.C.), where mention again occurs of the *Beraberata*, one of the southern races conquered by him. Hence Brugsch ("Reisebericht aus Ägypten," pp. 127 and 155) is inclined to regard the modern "Barabra" as a true ethnical name confused in classic times with the Greek and Roman *Barbarus*, but which has resumed its historic value since the Moslem conquest.

²⁶ Thus in Sakakini's tabular returns of the average prices of slaves sold in Egypt from 1870 to 1880, all, of whatever *provenance*, are grouped under two heads—"Nubiāns" and "Abyssinians," none being true Nubiāns or Abyssinians, but either Nubas and other Negroes from Kordofan and the Upper Nile, or else Barea, Basé, Shan-Gallas, and other Negroid peoples from the Abyssinian

uplands. According to these returns the latter command the highest prices in the slave market, £20 to £50 for adults, the Nubas fetching only from £18 to £40.

²⁷ The bronze shade is also noticed by Lepadius, *op. cit.*, p. 74: "Bei den Nubiern herrscht eine dunkle Bronze Farbe vor, dunkler als die der Habessinier." He adds: "Der alte Negertypus bricht nicht selten wieder ziemlich deutlich durch; namentlich ist das Wollhaar ziemlich häufig."

²⁸ All have woolly hair, says Rüppell ("Reisen in Nubien"), pouting thick lips, short flat nose, complexion quite black. Further comment is needless.

²⁹ It is noteworthy, however, that Eutychius of Alexandria (930) includes the "Nubi" among the six kinds of writing, which he tells us in a somewhat doubtful passage were current amongst the Hamitic peoples.

³⁰ For an explanation of this apparent antagonism the reader is referred to the monograph, "On the Ethnology and Philology of the Asiatic Races," appended to the volume on Asia, by A. H. Keane, in the Stanford Series, 1882, pp. 691, *et seq.*

³¹ The "Ethiopian" of some, the "Agazi" of other writers, the latter term denoting peoples of Geez speech. "Alle diese Völker haben einen innern Zusammenhang; sie sind Abyssinier, alte Christen, und bedienen sich des reinsten äthiopischen Idioms, des Tigré" (Munziger, *op. cit.*, p. 73). This use of the term "Ethiopian" is very confusing, as it is also, and more properly, employed as the collective name of the eastern division of the Hamitic family. The Himyarites (Abyssinians) are intruders from Arabia; the Hamites are the true autochthones, hence best entitled to the title of "Ethiopian," which by the ancients was applied, although somewhat vaguely, to all the native populations stretching south from the frontier of Egypt proper.

³² The Bogos are classed by Reinisch (*loc. cit.*, p. 94) with the Hamites, or "Kushites," as he calls them. But he elsewhere rightly affiliates them to the Abyssinian Semites, as speaking a pure Tigré (Geez) dialect, herein agreeing with Munziger in his "Ostafrikanische Studien," who is our best authority on these fragmentary ethnical groups on the north and north-east frontiers of Abyssinia.

³³ The Jalin claim special consideration as the most numerous, intelligent, and purest of all the Sudanese Arabs. They trace their descent from Abbas, uncle of the Prophet; but their Arabic speech, preserved and spoken with great purity, indicates the Hejas as their original home. The chief Jalin tribes, as enumerated by Munziger, are: Muhammadab, Mikringa, Bagelab, Uâdieh, Gebâlab, Kaliab, Gummieh, Gummieb, Gereshab Nif-ab, Sadab, Jaudallahab, Mekaberab, Meirefab, Mosellehab, Omarab, Timerab, Kitejab, Giaberab, Aliab, Giuberab, Seidab, Shatinab, Megiadab. The final *ab* of these tribal names is not an Arabic, but a Beja patronymic ending, borrowed from the neighbouring Hadendoahs of the Mareb Valley, with whom they have long been intimately associated. Some of the Jalin tribes of the Barka district have even adopted the To-Bedawieh language, and pass for Hamites.

³⁴ "Es ist nicht unmöglich dass die beiden Völker [Kababish and Baqqâra] von einem Stamme entsprossen, sich die Weide vertheilt haben, wodurch die Trennung stereotyp wurde. Die Kuhhirten hielten sich an den grasigen Süden, die Kababish an den trockenen aber von Mimosen stark bewaldeten Norden, der allein dem Kameel und der Ziege Convenirt." (Munziger, *op. cit.*, p. 561.)

³⁵ The natives of Kaffa, whose affinity to the Gallas has now been determined by Leo Reinisch, are collectively called Sidama by G. Chiarini in "Memorie della Società Geografica Italiana," I, Part 2, 1878.

³⁶ Afar appears to be the most general national name, Adal that of the dominant tribe; Danakil (plural Dankali and Danaklı) is the name by which they are known to their Arab and Hamite neighbours. Chiarini (*loc. cit.*) recognises the close relationship of Somali and Galla, but asserts that the Afar language "ha ben poco di commune colla galla."

³⁷ The Halenga of the Mareb river are, however, said to be of undoubtedly Amharic descent.

³⁸ "Sie sind wohl der Ueberrest des alten Abyssinischen Reiches vor der

Einwanderung der Semiten" (Munziger, *op. cit.*, p. 76). The type of the Basé (whose true name is Kunáma), as described and figured by F. L. James ("Wild Tribes of the Sudán" (London, 1883), seems distinctly Negroid. In the Preface, p. 1, of that work, they are stated to be "of a totally different type, much blacker and more closely allied to the pure Negro than any of their neighbours." Yet Munziger asserts that the "sogenannte Negertypus fehlt" (p. 467). The point must be finally decided by a study of their language, of which nothing appears to be known. Of the Barea there are two divisions, those of the Hagr district who call themselves Nere, and those of Mogareb. There is no general national name, *Barea*, meaning "slave," being simply an abusive term applied to them by the Abyssinians.

³⁹ "Die Sprache von Tegelé hat mit dem Nuba nichts gemein; ein genaueres Studium der erstern hat mich Russeger's Classification entgegen, davon überzeugt" (Munziger, "Ostafrikanische Studien," p. 551). The same writer, a personal observer, assures us (p. 557) that there is absolutely nothing of the conventional Negro type about them; and as their language is neither Arabic, Hamitic, nor Nuba, their true position remains still to be determined.

MAY 13TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From Dr. MUIRHEAD.—Cambuslang. By J. T. T. Brown.

From the SEC. DE FOMENTO.—Informe dirigido al Señor Secretario de Fomento sobre los trabajos ejecutados durante el año de 1883, por la Oficina de Estadística Republica de Guatemala.

From the SECRETARY OF THE INTERIOR.—Third Report of the United States Entomological Commission.

From the AUTHOR.—Ein Beitrag zur Kenntniss der Fulischen Sprache in Africa. By Gottlob Adolf Krause.

— The Lost Tasmanian Race. By James Bonwick.

— Notes on Labour in Central Africa. By Robert W. Felkin.

— Notes on the Madi or Moru Tribe of Central Africa. By Robert W. Felkin.

From the ACADEMY.—Proceedings of the Davenport Academy of Natural Sciences. Vol. III, Part 3.

— Jaarboek van de Koninklijke Akademie van Wetenschappen gevestigd te Amsterdam voor 1882.

— Processen-Verbaal van de Gewone Vergaderingen der Koninklijke Akademie van Wetenschappen. Afd. Natuurkunde. Mei, 1882 ; Ap., 1883.

- From the ACADEMY.**—*Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. Afd. Natuurkunde. Tweede Reeks. Deel. XVIII.*
- *Atti della R. Accademia dei Lincei. Transunti. Vol. VIII, Fas. 10.*
- From the HUNGARIAN ACADEMY.**—*Mathematische und Naturwissenschaftliche Berichte aus Ungarn. Erster Band.*
- From the ASSOCIATION.**—*Report of the British Association, 1883. Southport.*
- From the INSTITUTE.**—*Proceedings of the Canadian Institute. Vol. II, Fas. 1.*
- From the LIBRARIAN.**—*Report of the Mitchell Library, Glasgow, 1883.*
- From the DIRECTOR-GENERAL of the MUSEU NACIONAL DE RIO DE JANEIRO.**—*Guia da Exposição Anthropologica Brazileira realizada pelo Museu Nacional do Rio de Janeiro.*
- From the SOCIETY.**—*Transactions of the Anthropological Society of Washington. Vol. II.*
- *Mittheilungen der Anthropologischen Gesellschaft in Wien. Band XIV, Heft 1.*
- *Proceedings of the Asiatic Society of Bengal. 1883, No. 10. 1884, No. 1.*
- *Transactions of the Asiatic Society of Japan. Vol. XI, Parts 1, 2; Vol. XII, Part 1.*
- *Journal of the Royal Asiatic Society. Vol. XVI, Part 2.*
- *Proceedings of the Royal Geographical Society. May, 1884.*
- *Transactions of the Royal Society of Literature. Vol. XIII, Part 1.*
- From the EDITOR.**—“*Nature.*” Nos. 756–758.
- *Revue Politique et Littéraire. No. 19.*
- *Revue Scientifique. No. 19.*
- “*Science.*” Nos. 63, 64.
- *Science Monthly. May, 1884.*

Dr. MAXWELL T. MASTERS exhibited a series of agricultural implements brought by Mr. Livesay from the Naga Hills, at the north-east corner of Assam. The tools were chiefly such as are used for rice culture on the irrigated slopes of the hills; the natives are said to be like the Burmese, and wild, but with a considerable degree of civilisation. A large rude knife is used for all purposes for which a knife can be used, even to the decapitation of differentiating neighbours. The skulls of the decapitated ones are burnt. The implements exhibited were rakes made of bamboo and wood, a hoe and iron knife with cord and wooden sheath for suspension.

Dr. J. STEPHENS sent a drawing of a large pointed Palæolithic implement, recently found near Reading; length 9½ inches, weight 2 lbs. 3½ oz.

Mr. W. G. SMITH exhibited two Palæolithic implements,

recently found at north London: one was made of quartzite, the first example met with in the London gravels of this material; the other was a white implement from the "trail and warp." He also exhibited two white porcellaneous Palæolithic flakes replaced on to their original blocks: the four pieces were found by him at north London, wide distances apart, at different times during the last six years.

Mr. Smith also exhibited a large axe from New Guinea, with a keen blade of silicious schist or banded chert, $9\frac{1}{2}$ inches long, and weighing over $2\frac{1}{4}$ lbs. The axe was sent home by a sailor, and Mr. Smith purchased it of a person who was using it at north London for chopping up firewood.

The DIRECTOR read a paper, by Mr. E. H. MAN, on the Ethnology of the Andaman Islands.

The PRESIDENT then read the following paper:—

ADDITIONAL OBSERVATIONS *on the OSTEOLOGY of the NATIVES of the ANDAMAN ISLANDS.* By WILLIAM HENRY FLOWER, LLD., F.R.S., P.Z.S., Pres. Anthropol. Inst., Director of the Natural History Departments of the British Museum.

IN the year 1879 I read a paper before the Institute describing the osteological characters of the natives of the Andaman Islands, as derived from the examination of nineteen skeletons, and a larger number of crania.¹ Since that time I have had the opportunity of examining ten additional skeletons, two of which are in the Museum of the University of Oxford, and eight in the Barnard Davis collection, now in the Museum of the Royal College of Surgeons. They are all from the same locality as the others, viz., the vicinity of Port Blair, all undoubtedly genuine unmixed natives, having been obtained through the kindness of Mr. E. H. Man. Five are males and five females, and all are adults.

In my former communication I gave the average measurements of the limb bones, and the principal dimensions of the cranium and pelvis, expressing my belief that the materials at my command were sufficient to draw with safety some general conclusions as to the physical characteristics of the race, and adding, "Perhaps when still larger numbers of skeletons are examined, some of the statements and average measurements and indices will have to be modified, but probably not in any essen-

¹ "Journ. Anthropol. Inst.", vol. ix, p. 108 (1876).

tial degree." The number of skeletons being now raised from nineteen to twenty-nine, the two sexes being represented in as nearly equal proportions as possible, we have a good opportunity of testing the truth of this supposition, and of giving still more reliable averages of the dimensions and proportions of a people of a remarkably pure and homogeneous race, which may serve as a good standard of comparison with those of other races. The measurements are all taken exactly in the same manner as in the former paper, and the comparison is instituted between the average then obtained from the smaller number of skeletons, and that now derived from the entire number now available (composed of those formerly used with the new ones added). The figures given in the present communication will therefore supersede those given before, and represent the correct averages of the race as far as our present data enable us to give them.

Limb Bones.

The average length of the fifteen clavicles of males previously given was 116·9,¹ the entire series of twenty-five gives a very slight increase of length, viz., 118·2. The average length of eighteen clavicles of females was 107·1. The average length of twenty-six is 107·5. The ratio of the length of the clavicle as compared with the femur is now in the males 30·0 to 100, in the females, 28·3 to 100. Of the humerus the average length in the males is reduced from 281·3 to 276·5; in the females, on the other hand, increased from 260·7 to 263·5. The radius is also reduced in the males from 228·9 to 225·2, but in the females remains practically the same, the former number given being 210·0, and the present average 210·1. The average length of the femur is also reduced from 398·7 to 393·4 in the males, and increased in the females from 378·2 to 380·4. The tibia is slightly reduced in the males from 336·2 to 332·1, and in the females scarcely undergoes any alteration, being 320·5 in the former list, and 321·0 in the present.

An inference was drawn as to the average height of both sexes from the length of the femur, upon the usual estimate derived from measurements of our own race, that the height is to the length of the femur as 1000 to 275. Whether it applies equally to the Andaman is of course not known, although the height inferred by the calculation accords remarkably with the results obtained from the measurement of living individuals. The average height of the males calculated upon the old average length of fifteen femurs was 1,448 mm., or 4 feet 9 inches. The average calculated from the new total of twenty-five femurs

¹ The measurements are all given in millimetres.

is 1,431, or 4 feet 8·3 inches. The maximum of the old series is not exceeded, but the minimum is reduced from 1,385 or 4 feet 6·5 inches, to 1,320 or 4 feet 4 inches. The new averages in this sex are probably more to be relied upon than the former ones, which, as remarked at the time, were unduly raised by the presence of an exceptionally tall man (that presented to the British Museum by Dr. Mouatt) among the series. In the case of the females, the old height was calculated at 1,375, or 4 feet 6·1 inches; it is now placed at 1,383, or 4 feet 6·4 inches, being but very slightly above. The new numbers all fall within the old maximum and minimum.

The inter-membral index, or length of the humerus and radius added together, compared with that of the femur and tibia, the latter being taken as 100, taking both sexes together, is exactly the same as in the former list, viz., 68·3. In the males it is 69·0; in the females 67·5.

The femoro-humeral index (or ratio of the humerus to the femur, the latter being taken as 100) is also unchanged, being 69·8. In the males it is 70·3, in the females 69·2.

The femoro-tibial index undergoes the excessively trifling modification from 84·5 to 84·4. It is exactly the same in both sexes.

The humero-radial index, which forms one of the most important differences between the skeleton of the Andamanese and the European, is only changed by the additional specimens from 81·0 to 80·6, taking both sexes together. There is some difference between this index in the male and the female skeletons, being 81·5 in the former, and 79·7 in the latter.

Cranium.

All the peculiarities of the Andamanese cranium fully described in the previous communication are strikingly illustrated by the present specimens, and therefore need not be repeated. There is not one that is in any way exceptional in any of the characters that can be judged of by the eye, although some of the measurements show slight differences, especially a greater index of breadth, due apparently to the presence of some rather peculiarly narrow skulls in the former series. It must be noted, however, that as many as four of this small series (all males) have the frontal suture persistent. In the former series of thirty-five known examples of skulls of the race, four were recorded as metopic; in forty-eight of which I have at present evidence of the condition of the frontal bone, as many as six, or 12·5 per cent., are in this condition, so rare among the dolichocephalic Melanesians and Australians.

With regard to the capacity of the cranium there appears to be little difference from the former series, although the new appear larger owing to a different method of measurement, which as far as tried gives more certain results. Some of the skulls, the capacities of which were given before, are no longer accessible to me, but those which are in the Museum of the College of Surgeons have been measured over again with very great care, using shot instead of mustard-seed as formerly, and then added to the new specimens, giving an average of 1,281 cc. in thirteen males, and 1,148 cc. in the same number of females. These numbers may be substituted for 1,244 and 1,128 of the males and females respectively given in the former communication. Among the males the maximum is 1,400, and the minimum 1,120; among the females the maximum (one of the new series, No. 1,486 of the Barnard Davis collection) attains the exceptional capacity of 1,375, giving perhaps an unduly high average to this group; the smallest is 1,040.

The average horizontal circumference in the twelve males of the former series was 480; the additional eight only change the average by 1 millimetre, it being now 481. The average circumference in the female is absolutely unaffected, it being 462 in the original series of twelve, and the more extended one of seventeen.

The average length (ophryo-occipital) of the twelve males was 167·5, that of the twenty-one 167·4, showing only a difference of $\frac{1}{10}$ of a millimetre. On the other hand, the maximum parietal breadth in the new series somewhat exceeds that of the old, principally in consequence of two or three unusually narrow skulls being contained in the former. The average of the old series was 134·9, that of the new 135·8, raising the index of breadth from 80·5 to 81·1. The average height (basi-bregmatic) in the former series was 129·6, in the present series 129·5, the index being 77·3 instead of 77·0.

In the females the average length of the old series of twelve was 160·6; that of the combined series of eighteen, 160·8. The average of breadth is changed from 132·8 to 133·2, the index being only altered from 82·7 to 82·8, an unappreciable difference. The average height of the twelve crania was 125·3; that of the eighteen 124·9, the index changing only from 77·9 to 77·7.

The average basi-nasal length of the males in the former series of twelve was 95·0; in the present series of twenty-one crania it is 94·6; the basi-alveolar lengths being respectively 96·3 and 94·6, reducing the gnathic index¹ from 1,014 to 1,000, the present series being thus somewhat less prognathous than the former one. In the females the former basi-nasal length was

¹ See "Journ. Anthropol. Inst.", vol. x, p. 163.

90·7, that of the eighteen skulls now measured 90·3; the basi-alveolar lengths being 92·7 and 92·4, which produces practically no alteration in the gnathic index, which is given as 1,022 in the previous list, and is 1,023 in the present one.

The measurements of the nasal aperture in the males are as follows:—Former series of twelve crania: height 45·8, width 23·4, index 51·1; present series of twenty-one crania, height 46·1, width 23·4, index 50·8; the width is therefore the same, but the increased height gives a slightly lower index. In the females: former series of twelve, height 43·2, width 22·2, index 51·2; present series of eighteen: height 43·3, width 22·4, index 51·5. The general average index of the male and female skulls combined is exactly the same in both the whole and the partial series, viz., 51·15, which figure may be safely accepted as the average nasal index of the race.

The orbital measurements and indices receive scarcely any alteration from the additional specimens. In the males the height, width, and index were respectively 36·3, 33·0, and 90·6; now they are 36·5, 33·0, and 90·4. In the females, the old numbers were 35·2, 32·2, and 91·5; now they are 35·1, 32·1 and 91·4.

With such close agreement in all the primary measurements of the cranium, it seems scarcely necessary to follow out in detail the numerous minor dimensions, as whenever tested they correspond equally nearly with those previously given. The main point that I wished to test has been thoroughly established, the twelve skulls of each sex previously examined furnishing a very fair average of the characters of the race.

It was stated in the former communication that "in dimensions the teeth appear equal to the average of those of Europeans, and therefore may be considered large in relation to the general size of the body." Since that time I have found it convenient to use an index to express this relation, which is obtained by comparing the length of the molar series (straight line between the anterior part of the first premolar and the posterior point of the third molar = d) with the basi-nasal length (or cranio-facial axis) $\frac{d \times 100}{BN}$; may be called the dental index, and by it races may be divided into *megadont*, *mesodont*, and *microdont*. Like most of the frizzly-haired races, the Andamanese are decidedly megadont; the average index in nine males being 44·4, and in eight females 46·5. Unfortunately so many of the skulls have lost part or all of the series of teeth, that the number available is rather smaller than might be wished.

Among other points in the skeleton of primary importance, as indicating race characteristics, is the pelvic index, or the

ratio of the antero-posterior to the transverse diameter of the brim, the latter being taken as 100. This was given in the former paper for the males (average of eight) 101, for the females (average of nine) 95·2. In the united series the males now give (average of twelve) 98·8, and the females (average of thirteen) 96·4; a slight diminution therefore in the index for the males, and an increase in that of the females. The dimensions from which the index is derived are as follows:—In the males the average transverse and antero-posterior diameters were respectively 92·4 and 92·9, now they are 93·4 and 92·2; in the females, formerly 102·9 and 98·0, as against 103·0 and 99·3. It will be observed that the alterations of averages in no case exceed 1·3 mm., or $\frac{1}{20}$ of an inch.

MAY 27TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors:—

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— Note sur une Inscription Chronographique de la fin de la période Aztéque appartenant au Musée du Trocadéro. By E.-T. Hamy.

From the ANTHROPOLOGICAL SOCIETY OF BERLIN.—Zeitschrift für Ethnologie, 1884. Heft 2.

From the LISBON GEOGRAPHICAL SOCIETY.—Revista Mensal. Tomo II, 1883.

From the ACADEMY.—Boletin de la Academia Nacional de Ciencias en Córdoba. Tomo VI, Entrega 1^a.

From the INSTITUTION.—Journal of the Royal United Service Institution. No. CXXIII.

- From the SOCIETY.—Proceedings of the Royal Society. No. 230.
— Journal and Proceedings of the Royal Society of New South Wales. Vol. XVI.
— Bulletin de la Société Impériale des Naturalistes de Moscou. No. 3, 1883.
- From the EDITOR.—Matériaux pour l'Histoire de l'Homme. May, 1884.
— "Nature." Nos. 759, 760.
— Revue d'Ethnographie. No. 1, 1884.
— Revue Politique et Littéraire. Tom. XXXIII, Nos. 20, 21.
— Revue Scientifique. Tom. XXXIII, Nos. 20, 21.
— "Science." Nos. 65, 66.

The election of F. C. J. SPURRELL, Esq., was announced.

The following paper was read by the author:—

On the KUBUS of SUMATRA.

By H. O. FORBES, F.R.G.S., F.Z.S., Memb. Anthropol. Inst.

[WITH PLATE X.]

THE Kubus are a small tribe of people inhabiting the central parts of Sumatra, and it has been claimed by some for them that they are the remnants of the pristine indigenes of the country. On arriving in the region round which they peregrinate I was extremely anxious to have a view of these people, and I am indebted to the Chief of one of the villages on the Rupit River for my first introduction to two men, one woman, and one child; shortly afterwards, however, at Surulangun, through the kind assistance of Mr. Kamp, the Controller of the district, I was able to examine a considerable number of these people, to collect some information about them, and to obtain one cranium, and, after some considerable difficulty, one complete skeleton.

The Kubus are a nomadic race wandering about in the forests on the borders of the Jambi Sultanate and of the Palembang Residency, along the banks and affluents of the great rivers, the Musi, and of the Batang Hari. The Dutch Government some years ago began the attempt to teach these people something of the art of agriculture, and have, after much difficulty, succeeded in getting a few families in some of the districts to assume in some degree a settled residence in villages made for themselves. It was owing to these partially civilised communities that I am indebted for a sight of the people.

In their wild state they live in the deep forest, making temporary dwellings, if their rude shelters can be called such,

where they stay for a few days at a time, where food is obtainable, or for the purpose of collecting beeswax, dammar, and gutta-percha. Their dwellings are a few simple branches erected over a low platform to keep them from the ground, and thatched with banana or palm-leaves. They are so timidous and shy that it is a rare circumstance for any one to see them, and of course an extremely rare one for any white man. In fact, I doubt if any white man has ever seen the uninfluenced Kubu, save as one sees the hind-quarters of a startled deer. In the small trade carried on between them and the Malay traders of the Palembang and Jambi Residencies, the transactions are performed without the one party seeing the other. The Malay trader, ascending to one of their places of rendezvous, beats a gong in a particular way to give notice of his arrival. On hearing the signal, the Kubus, bringing out what forest produce they may have collected, and depositing it on the ground at this place, hastily retire into close hiding, beating a gong as a signal that all is ready. The trader then slowly and cautiously approaches, lays down on the ground the cloth, knives, and other articles of barter he has brought, to the amount which he considers an equivalent exchange, beats a gong, and in like manner disappears. The Kubus proceed then to examine the barter offered; if they consider the bargain satisfactory they remove the goods, beat their gong and go away; while the trader packs up the produce he finds left lying on the ground. If the bargain is not considered by them sufficiently advantageous, they set on one side a portion of their produce, to reduce it to what they consider the value of the barter offered; and thus the affair see-saws till finally adjusted or abandoned. They are so afraid of seeing any one not of their own race, that if suddenly met or come up with in the forest, they will drop everything and flee away. They cultivate nothing for themselves, but live entirely on the products of the forest—snakes, lizards, grubs, fruits, an occasional deer, pig, or tapir, which a happy effort has rewarded them with—and what they purchase by barter from Malays. They know nothing of art; they manufacture absolutely nothing. Their knives and the universal spear with which they are armed are purchased from the Malays with whom they trade. Neither men nor women wear clothes, except the small T-bandage of bark-cloth; some even go entirely in a state of nature. Where European influence is beginning to have its modifying effect—and where is it not now felt in some measure?—calico coverings such as modesty demands are worn. They occasionally keep in confinement a few birds, and a species of dog of moderate size always accompanies them. They will scarcely touch water for ablutionary

purposes, and have consequently a strong, unpleasant odour; and a small stream which they cannot cross by prahu, or by stepping-stones, is often a barrier to their journey. This information, obtained from trustworthy sources, I shall now supplement by some notes from my journal of what I have myself seen.

On approaching the steps of the hut in which I was living, my first acquaintances made a bashful salutation with the hand in the awkward way of children, advancing with open eyes full of wonder and curiosity, more marked in the woman's face than in her companion's, she being evidently less accustomed to see other than her own people. They rarely come into the villages, the villagers always seeking them out in order to buy from them their forest-gathered produce. The chief who went to induce them to visit me had to assure them that I did not wish to make them take up their residence in a village, or to compel them to cultivate rice fields.

The colour of their skin was a rich olive brown; while their hair, always in a dishevelled state, was jet black and inclined to curl. It was certainly less straight than that of the village Malays; but whether this curling is the result of want of attention, and of its becoming matted and twisted, as I incline somewhat to believe, I am not able to say. The woman's hair was straighter than the men's. Her features were what I might call *Mongolian* in contrast to her companion's, which I might designate as more conforming to the Malayan type about them. The child might have been a very dark-complexioned Italian, or a dark Arabian. Her features are represented very truthfully in fig. 2, Plate X. Both men had a slight moustache, and a few hairs on the chin. What struck me most in them was their extreme submissiveness, their want of independence and will; they seemed too meek ever to act on the offensive. One cannot help feeling that they are harmless overgrown children of the woods. Within the memory of the chief of the village in which I first met these Kubus, have they only come to possess a sense of shame; formerly they knew none, and were the derision of the villagers into whose neighbourhood they might come.

On the Musi banks, at the village of Surulangun, I met a considerable assemblage of both sexes. Several of them it would have been impossible to tell from the people of the village by their features; on the other hand, they had characteristics, scarcely reducible to words, by which they could have been picked out among a crowd of Malays. I tried to formulate the differences, but found myself scarcely able to say wherein they consisted. The high (between the eyes) straight

dorsum of the nose in a few was remarkable; and the sharply prominent cheek-bones. The villagers asserted that they could tell a footprint in the mud of a Kubu from that of their own people. I caused several of the Kubus to walk over sheets of paper after rubbing the soles of their feet with soot, but I could not discover, either in the shape of the foot or in its print, any divergence from the foot in the people about them. The lips of the Kubus were thin; and the eyes restless and glancing, as if ever on the alert. The average of seven males was about 1·59 metres, and of five females 1·49 metres, which is about the average stature of the Malays of Malacca. On comparing the impress of their hands with those of the people of the district, those of the Kubus I found to be smaller. They are, I observed, rather subject also to the reduplication of fingers.

They are said to have a language of their own unintelligible to their neighbours, but I failed to induce them to give me any specimen of it, if it existed. I could not understand their speech at first; but after some conversation I could detect that they really spoke a corrupted Malay with a peculiar accent.

Monogamy is the rule among them; but a few have two or more wives. Their nuptial ceremony is a very simple affair. The man having fixed his choice on a young girl, and obtained the consent of her parents to his suit, brings to her father such gifts as he has—a knife, a spear, cloths, or money (if he has any), dammar, and beeswax—and such rare fruits of the forest or favourite food animals as may reward his search. When this gift is satisfactorily large, those who may be within reach are called together. Seating themselves below some tree, the father of the maiden informs them that he has given his daughter So-and-so to So-and-so in marriage. One of the company then strikes the tree under which they sit several times with a club, proclaiming them to be man and wife. The ceremony is followed by such feast as can be provided, principally out of the fruits and animals the bridegroom has paid for his wife with. It is a rare thing for a Malay man to marry a Kubu woman; but it occasionally happens, notwithstanding that they consider the Kubus far their inferiors, a position which the latter seem to accept with very marked submissiveness. "You Kubu!" is a term of opprobrium which I have often heard applied by one native to another with whom he had quarrelled. The village people consider them little other than beasts. In no case will a Malay touch or interfere with a dead body of one of his people; yet I was able to obtain their assistance in disinterring the body of the Kubu from which I made the skeleton which Dr. Garson has done me the kindness to examine. The Kubus possess no personal property of any kind beyond what they can

carry about with them. Their food, which consists, for the most part, of wild fruits, or small animals—which they prefer, I am told, in a semi-putrid condition—they eat as they come by it, with little or no cooking. When traversing the forest, if one of them, on finding a bee-infested or a dammar-yielding tree, clear the brush around it, make one or two hacks in the bark, and repeat a form of spell, it is recognised by the others as his possession, which will be undisputed. This is the only property, if such it may be called, that they possess.

They are extremely fond of tobacco. Before one of them, who had seated himself on the edge of the verandah, I produced some of the coveted weed. It was a study to see how his face gleamed over, and his eyes followed the parcel with the eagerness of a dog's after a bone with which he is tempted. To try him, a handful of a very poor quality was offered him, which he snatched at, but after smelling and tasting it, he dropped it down with a sneer, just as a monkey might have done, fixing his eyes eagerly once more on the bundle first produced. Some of this was handed to him, the whole of which, after smelling, he rolled into a thick cigarette, wrapped it in a leaf, and on being given a light, smoked with prodigious mouthfuls in perfect and absorbed silence. When he saw or was offered anything which he liked particularly, his eyes sparkled, and he expressed his eagerness by the continued repetition of a peculiar sound, "*S-s-hō-ō! S-s-hō-hō!*" Some fruits and a large plateful of rice offered to him were devoured more in the ravenous manner of a beast than of a man. When he had finished it he rubbed his stomach, to judge by its rotundity if he had had sufficient. Their intelligence is not, however, to be called of a low order. They evince considerable dexterity in the use of their spears, and are wonderfully accurate marksmen with stones. They post themselves behind some tree, in front of which is another wherein birds are lodged, and thence discharge the stone over the one that hides them, so as to drop on the bird in the other. When sick they use various leaves from which they make decoctions; but their curative pharmacopoeia is very limited. I could not discover that they knew many poisons, but they were best acquainted with such plants as possessed aphrodisiac qualities, or were able to cause abortion. In their truly wild state they leave their dead unburied in the spot where they died, giving the place ever after a wide berth; but where the influence of the village customs has begun to affect them, the body is now generally buried face downwards, with a strip of bark below and above the body. They seemed to have no idea of a state after death;—"When we are dead, we're dead."

They have a tradition that they are the descendants of the

younger of three brothers: the two elder were circumcised in the usual way; the younger it was found no instruments would circumcise, a circumstance which so ashamed him that he betook himself to the woods to live, and "We are his descendants," they told me.

Leading so nomadic a life, the jurisdiction that can be exercised by any one over them can be but very slight. Such as it is, it is wielded by the elders of the party, who settle disputes that arise between man and man, and impose punishments for offences.

It will be seen that the Kubus differ much in their habits and ways of life from those about them; but whether they are the last survivors of their race, or are only a struggling remnant, kin to those about them, who at some past time were driven from below the family roof tree to save their lives in the forest fastness, and who, even when persecution has ceased, yet cling to the shade of those pillars which in their need afforded them the kindly refuge they sought, are questions which I must now leave Dr. Garson, if the osteological material submitted to him has been sufficient for his purpose, to give us some reply to.

Description of Plate X.

Figs. 1 and 3. Male Kubus from near Surulangun.

Fig. 2. Female Kubu from near Sukaradja.

" 4. Female Kubu from near Surulangun.

MEASUREMENTS OF LIVING KUBUS.

♀	Height in metres.	Circumference of head.	Arm, from shoulder to elbow.	Arm, from shoulder to tip of middle finger.	Circumference of chest at rest.	Circumference of chest during inspiration across mamæ.	Stretch of arm from tip to tip of fingers.
							—
I	1.5825	0.530	0.350	0.780	0.780	0.8100	1.5900
II	1.5825	0.525	0.325	0.750	0.7600	0.8000	1.5950
III	1.6000	0.537	0.325	0.745	0.7825	0.8025	1.6500
IV	1.6300	0.522	0.345	0.755	0.7650	0.7700	1.6100
V	1.5800	0.530	0.330	0.765	0.7400	0.7600	1.6050
VI	1.5775	0.530	0.315	0.750	0.7725	0.7725	1.6400
VII	1.6200	0.520	0.355	0.785	0.7725	0.8025	1.6150
Average ..	1.596	0.526	0.335	0.7614	0.7684	0.7883	1.6150
♀							
I	1.460	0.510	0.300	0.670	0.76*	—	1.485
II	1.480	0.520	0.270	0.680	0.75	0.7800	1.455
III	1.495	0.510	0.315	0.700	0.81	0.8176	1.535
IV	1.535 three children. had five children.	0.500 0.502	0.315 0.330	0.725 0.725	0.73 0.68	0.7550 0.7100	1.560 1.520
V							
Average ..	1.493	0.508	0.306	0.690	0.746	0.7157	1.511

* Round breasts.

The following paper was then read by the author:—

On the OSTEОLOGICAL CHARACTERS of the KUBUS of SUMATRA.
By J. G. GARSON, M.D., F.Z.S., Memb. Anthropol. Inst.; Royal
College of Surgeons, of England; Lecturer on Comparative
Anatomy, Charing Cross Hospital.

THE osteological remains of the Kubus of Sumatra, placed in my hands for examination by Mr. H. O. Forbes, consisted of the skeleton of a female and a single skull, also that of a female, which are now in the possession of the British Museum. Both specimens are those of adults of middle age.

Stature.—The height of seven males measured by Mr. Forbes averaged 1,596 mm., or almost exactly the same as that of adult English women¹ (1,592 mm.), while the average height of five females was 1,493 mm.; the difference between the stature of the male and female Kubus is therefore 103 mm. The height of the skeleton placed in my hands, estimated from the length of the femur, is 1,450 mm., which, allowing for the soft parts existing in the living body, would indicate the stature of this individual to be about the average of the females measured by Mr. Forbes.

Characters of the Skull.

Cranium.—The appearance presented by the drawings of the people taken from life by Mr. Forbes shows that the head is of moderate length, somewhat narrow transversely in the frontal region, and flat in the glabellar and superciliary regions; the malaris are prominent, the nose becomes gradually elevated towards the tip, its contour following a wide arc; the chin is narrow but not pointed; the lips are thick and prominent, and the hair is straight with a tendency to curl.

Turning to the skulls we are at once struck by the strong resemblance they bear to one another in general appearance, the chief difference observable between them, on a superficial examination, being that that belonging to the skeleton is somewhat larger generally than the other.

The maximum length of the one is 174 mm., and of the other 173 mm., while their maximum breadth is 135 mm. and 136 mm. respectively. These measurements give a cephalic index to the one of 77·6, and to the other of 78·6, which places them in the mesatecephalic group of Flower and of the Frankfurter Verständung.

The altitudinal index (the ratio of the basio-bregmatic height

¹ Report of the Anthropol. Committee of the Brit. Assoc. (Rep. Brit. Assoc., p. 260, 1883.)

to the maximum length) differs somewhat in the two skulls, that belonging to the skeleton being considerably higher than the other; but in neither instance does the height exceed the breadth.

The general form of the cranium, as seen in the *norma verticalis*, is narrow in front, the sides straight and gradually diverging to the parietal eminences which are situated near the posterior border of the parietal bones. The differences in the broadening out of the cranium from the anterior frontal to the parietal regions in the two skulls is well seen by comparing the relation of the minimum and maximum frontal breadths of each with their respective maximum breadth, this latter being taken as 100. In the skull belonging to the skeleton, which we will designate as No. 1, the indices are 67·4, 79·2, and 100; in the other skull, which we will call No. 2, they are 64, 77·2, and 100. The glabellar region is flat and smooth, corresponding to outline No. 0 of Broca in skull No. 1, and to No. 1 in skull No. 2; superciliary ridges are entirely absent. The forehead rises somewhat vertically to the level of the frontal eminences (which are not prominent), and then slopes backwards and upwards till it attains its maximum, which is situated in the parietal region. Viewed from the *norma frontalis*, the arch of the top of the cranium is markedly flat, giving the stephanic region a somewhat angular appearance. In the parieto-occipital region the contour of the cranium falls with a moderate curve towards the foramen magnum. The general surface of the cranium is smooth, and the muscular ridges are little pronounced. The mastoid processes are feebly developed.

The sutures are very simple in No. 2, but somewhat more complicated in No. 1, though still simple; those in the former being represented by Broca's outlines of complication of sutures No. 2 for the fronto-parietal, and No. 3 for the parieto-occipital suture, the latter by Nos. 2-3 for the fronto-parietal, and No. 4 for the parieto-occipital. Wormian bones are not present in either skull. In No. 2 the sutures are more open than in No. 1, in which the coronal and sagittal sutures are approaching obliteration.

With regard to the projection of the zygomatic arches, in relation to the contour of the bi-stephanic region, No. 2 is slightly phænozygous, but in No. 1 the arches are not visible, bi-zygo-stephanic index being 87·7 in No. 1, and 91·3 in No. 2. In my paper on the Cranial Characters of the Natives of Timor-Laut,¹ I showed that skulls in which this index is 90 and upwards are phænozygous; these Kubu skulls are therefore on the border-

¹ "Journ. Anthropol. Inst.", vol. xiii, p. 391 (1884).

line between the two conditions. The inion is fully developed in both skulls, being represented by Broca's outline No. 1.

The average horizontal circumference of the two skulls is 490 mm., 10 mm. less than the average circumference of the heads of the five living females measured by Mr. Forbes.

Facial portion.—The nasal bones have a very characteristic shape; they are moderately prominent in respect to the plane of the face, and form a gentle curve from above downwards, being intermediate in curve between Broca's outlines Nos. 1 and 2.

The nasal aperture differs in the two skulls: in No. 1 it is longer and slightly narrower than in No. 2, the index of the former being 50, while that of the latter is 56·8, which places No. 1 in the middle of the mesorrhine group (48–53), and No. 2 well within the platyrhine (above 53). The inferior border is nearly straight transversely, and is fairly well defined. The nasal spine of No. 1 is represented by Broca's outline No. 2, and in skull No. 2 by the outline No. 1.

The orbits are somewhat more rounded in No. 1 than in No. 2, the orbital index of the former being 89·2 and of the latter 80·1. The margins of the orbits are thin and sharply defined.

The malar bones are narrow vertically, flattened anteriorly, and curve abruptly backwards, which gives that marked prominence at the malar point so well seen in the drawings by Mr. Forbes. The nasi-malar angle of No. 1 skull is 143°, and of the other 140°.

The alveolar index of the two skulls is very similar, being 96·9 in No. 1, and 98·8 in No. 2. They are therefore on the border-land, figuratively speaking, between orthognathous and mesognathous.

The palato-maxillary index of No. 1 is 126, and of No. 2, 120·4, measuring the length and breadth of this region according to Professor Flower's plan. The palate is comparatively flat. The teeth are in good condition, small in size, and little worn. In No. 1 the two upper incisors have been lost during life.

The relation of the breadth of the middle portion of the face, from the alveolar point to the nasion, to the bi-zygomatic breadth (the latter being taken as 100), is as 52·5 and 53·9 to 100 in the two skulls respectively. This is the mid-facial index of Kolmann, and shows a very close similarity in the two skulls.

The different measurements of the mandible show great similarity. The chief point to be noted in this bone is the large size of the symphesial angle, which is 84° in the one and 88° in the other skull, indicating a much more vertical chin than obtains generally in Europeans.

The pelvis not being articulated, I was unable to ascertain all the measurements which should be taken, but I measured the

transverse and antero-posterior diameter of the brim, which are undoubtedly the most important dimensions. The transverse diameter of the brim measured 177 mm., and the antero-posterior diameter 122, which gives a pelvic index (taking the transverse diameter as 100) of 104·3. The index of forty-nine European female pelvis, measured by Verneau and myself, was 79·0; while that of thirteen Andamanese, measured by myself, was 96·2. The antero-posterior length in comparison to the transverse breadth of the brim in this Kubu woman's pelvis is extreme; indeed I have never seen or measured a pelvis of so exaggerated a type, approaching in form nearly to that of the anthropomorphous apes. The great antero-posterior length of this specimen is due chiefly to the straightness of the sacrum. It is extremely desirable that additional specimens should be procured, so as to ascertain whether such a form of pelvis is normal in this race.

The scapular index, or the ratio of the breadth of the scapula to the length, the latter being taken as 100, is 72·95 in the Kubu, in the Europeans (Flower and myself) 65·2, in Negroes (Broca) 68·16, and in Andamanese (Flower) 69·8.

The limb bones are slender; the index obtained by comparison of the upper and lower limbs with each other—the inter-membral index, or the length of the humerus and radius added together compared with that of the femur and tibia (the latter being taken as 100), is 70. This index in Europeans measured by Professors Broca and Flower was found to be 69·2 and 69·73 respectively; in Negroes Broca ascertained it to be 68·27; and in nineteen Andamanese Flower found it to be 68·3. This high index shows an approximation in the proportions of the limbs of the Kubus to those of the anthropoid apes, and indicates that the length of the upper limb is considerably greater in proportion than that of the lower as compared to what obtains in Europeans. In the Negro and the Andamanese, on the other hand, the upper limb is proportionately to the lower shorter than in Europeans.

The femoro-humeral index, or the ratio of the humerus to the femur, the latter being taken as 100, is 75·2. In twenty Europeans measured by Broca and Flower it is 72·45, in sixteen Negroes (Broca) 69·79, and in nineteen Andamanese (Flower) 69·8. In this index also the variation in the Kubus from the Europeans is in an opposite direction to that of the negroes and Andamanese.

The femoro-tibial index, or the ratio of the tibia to the femur, the latter being taken as 100, is 80·7 in the Kubu, 82·1 in the European (Flower), 84·7 in the Negro (Humphrey), and 84·5 in the Andamanese (Flower).

The humero-radial index, or the length of the radius compared to the humerus, the latter being taken as 100, is 74·1, in Europeans (Broca and Flower) 73·9, in Negroes (Broca) 79·4, and in Andamanese (Flower) 81·0.

Relations of the Kubus to other Races.

I have already said that on comparing the two skulls side by side, one is struck with the close resemblance they bear to one another. There is quite as close a resemblance between these two skulls as exists between Andamanese skulls. Such a condition occurring in a sufficiently large series would indicate purity of race, or at least isolation from other races for a long period of years. Unfortunately the number of Kubu skulls before us is not sufficiently large to justify very definite statements regarding them, though I think sufficient to answer one question which presents itself to us for solution, namely, as to what race the Kubus are allied,—whether they possess Negrito or Malayan affinities. The character of the hair, the form of the nose, the various characters of the skull, and the proportion of the limb bones show that they cannot have any near affinity to the Negrito race found in various parts of the Indo-Malayan Archipelago, but that they are decidedly Malays, and therefore Mongoloid. The high nasi-malar angle, the high and broad face, the flat forehead owing to absence of all glabellar and superciliary ridges, the slight sub-glabellar nasal depressions, and the nomadic life they lead, are all highly characteristic of the Mongolian race.

The frizz in the hair seen in the drawings by Mr. Forbes is probably to be accounted for by their having at some remote period intermingled slightly with the Negrito people, possibly during their migration southward. There is, however, evidence that they have for a long period been isolated from the other surrounding inhabitants of the island, and that by absence of infusion of fresh blood they have come to resemble one another so closely that they now possess certain definite characteristics of a more or less stable nature. It is, however, very desirable that these observations should be extended by a study of a larger quantity of material from which to gather information than has been at my disposal. In the meantime we have to thank Mr. Forbes for the trouble he has been at to secure what must be considered a very valuable addition to our specimens illustrating the osteology of the Indo-Malayan Archipelago.

of the Kubus of Sumatra.

Race, Kubu Age.	Sex.	FACIAL MEASUREMENTS.																			
		1. Capacity.	2. Length, maximum.	3. Width, max.	4. Minimum fronto- breadth.	5. Maximum fronto- breadth.	6. Height.	7. Frontal.	8. Orbito-nasal.	9. Orbito-ocipital.	10. Fronto- occipital.	11. Antero-posterior arc.	12. Total transverse.	13. Total horizontal.	14. Pre-aurecular arc.	15. Length of forearm.	16. Basito-nasal length.	17. Total medianum.	18. Cranial medianum.	19. Cranial length.	20. Total medianum + 16.
No. 1, Adult	..	174	135	91	107	132	128	107	124	369	285	415	495	227	33	98	480	474	474	474	474
No. 2, "	..	173	136	87	106	125	116	105	123	348	275	393	485	269	35	91	480	474	474	474	474

Race, Kubu Age.	Sex.	MANDIBLE.																			
		1. Capacity.	2. Length, maximum.	3. Width, max.	4. Minimum fronto- breadth.	5. Maximum fronto- breadth.	6. Height.	7. Orbito-nasal.	8. Orbito-ocipital.	9. Orbito- maxillary.	10. Palato-maxillary.	11. Naso-malar angle.	12. Bl-gonial breadth.	13. Gonio-sympathetic length.	14. Sympathetic height.	15. Length of forearm.	16. Basito-nasal length.	17. Total medianum.	18. Cranial medianum.	19. Cranial length.	20. Total medianum + 16.
No. 1	95	64	48	24	19	37	33	20	107	122	50	63	143°	91	54	81	32	34	84°	84°	84°
" 2	90	61	44	25	21	37	30	20	105	115	49	59	140°	91	51	78	79	34	86°	86°	86°

Race, Kubu Age.	Sex.	APPENDICULAR SKELETON.																			
		1. Capacity.	2. Length, maximum.	3. Width, max.	4. Minimum fronto- breadth.	5. Maximum fronto- breadth.	6. Height.	7. Orbito-nasal.	8. Orbito- maxillary.	9. Nasal bone.	10. Nasal spine.	11. Nasal width.	12. Breasts.	13. Thighs.	14. Legs.	15. Humerus.	16. Radius.	17. Ulna.	18. Scapula.	19. Brachium.	20. Forearm.
No. 1	77.6	75.9	96.9	52.5	50.0	89.2	126.0	0	2.8	1	0	122	117	399	322	122	88	290	215	—	—
" 2	78.6	72.2	98.8	53.9	56.8	80.1	120.4	1	3	1	1	0	—	—	—	—	—	—	—	—	—

Indices.

Broca's descriptive Nos., indicating size of

The following paper was then read by the author, who illustrated his remarks by the exhibition of a large and interesting collection of antiquities from Antiparos:—

Notes on PREHISTORIC REMAINS in ANTIPAROS.

By THEODORE BENT, Esq.

I CHOSE the island of Antiparos as a profitable point for making prehistoric researches for several reasons. Firstly, the island is scarcely alluded to at all in historic times; in fact, the only allusion I can find is in Stephanos Byzantios, who says, "Oliaros (that is the ancient name of Antiparos) is one of the Cyclades about which Heracleides of Ponticus, in his account of the islands, tells us it was a colony of the Sidonians, distant from Paros about nine stadia." Secondly, there are no remains of historic times on the island, no trace of temples, walls, or buildings of any kind. Thirdly, I became aware that the island was covered with extensive graveyards, which argued at some time or another an extensive population. It is true that every island in the AEGEAN sea, every barren rock, has graveyards of a similar nature, but then I thought it wisest to choose an island about which there were no historic records, and at the same time evidences of a population even more extensive than in the others, and if these had been in existence in historic times they could not have been passed over in silence.

As yet but few steps have been taken in discovering the ethnological distinctions of this vast prehistoric empire which inhabited the Greek islands. Dr. Schliemann's researches at Hissarlik bear on this subject, but the prehistoric inhabitants of Troy and the prehistoric inhabitants of the Cyclades must have had wide differences between them. The French school at Athens made valuable discoveries at Therasia, adjacent to Santorin, and forming a part of the same volcanic formation; but here again we have differences, which I will presently explain.

Having thus elected to make excavations at Antiparos, I set to work to discover the extent of the graveyards. I visited no less than four of them on the island itself, and heard of the existence of others. An adjacent rock in the sea is covered with them, and a small island between Antiparos and an uninhabited island called Despotico is still termed Cemiterio, from the cemetery which exists there; likewise in Despotico I visited two more similar graveyards, and I may add here that this island and Antiparos were once joined by a tongue of land. With the aid of the glass used by the sponge fishermen to

examine the bottom of the sea, I saw traces of dwellings in the sea, a well, an oven, and a small square house; unfortunately they were too covered with seaweed for me to form any opinion about them. It would be interesting, if possible, to compare them with the houses found at Therasia and Santorin by the French. It is on a hill just above this point that an extensive graveyard exists; it is possible, then, that these submerged dwellings formed the town of which this was the necropolis.

Again, the marble quarries of Paros made that island a great centre for settlements in all ages, probably by people of various races and languages. Paros, too, on the eastern side, is a perfect necropolis, and produces many specimens like those I show to-day, but Paros had a large population in historic times, which Antiparos had not, so I deemed it wiser to confine my researches chiefly to the latter island.

During my stay there I opened about forty graves in two different graveyards. The one to the west, just over the submerged town I mentioned above, was greatly inferior to the other on the south-eastern side of the island, both as to wealth and the artistic skill displayed in the articles in them; on the west I found no personal ornaments or obsidian implements, whereas the others were full of them. In the poorer graves we found the rudest marble representations of the human form. In the other graveyard I found the better-shaped figures with a decided advance in artistic skill; they have been made by filing away the marble with some implement, so as to leave the various parts of the body. We can here distinctly trace the nose, the eyes, and the mouth; the female figures have received special attention, and the idea of a sitting posture is given in one, and the calves of the leg are cleverly rounded. The one with pointed legs, I take, by comparing it with a specimen in the British Museum, to be a man: he was found in the same tomb as the woman. From the island of Amorgos I got a still more advanced specimen of these quaint figures: the trunk of a woman's body with an arm of another body round her back. In the museum at Athens there is a yet more perfect figure from Amorgos: a man sitting in a chair playing a harp, really a work of fair execution; but one and all have a peculiarly unnatural shape of the head, and it is puzzling to divine why, when they could round and finish off the other parts of the body, they persistently made the head pointed. In some graves I found legs all alone; in another a headless silver figure; in others round flat bits of marble which I threw away as mere pebbles at the time, but after-consideration makes me think that they were perhaps intended for the same purpose. Doubtless these figures had some religious purport, and from the excess of female

figures over male, it is presumable that the people were worshippers, though not exclusively, of some female deity. In our travels through the various islands we saw lots of these figures in the peasants' houses; but they invariably considered them as valuable as the Venus of Milo, and not entertaining the same idea myself, I failed to become possessed of them.

Again, as I said before, in the poorer graves I found no obsidian knives or cores, whilst in the richer ones they were abundant; but here again I found none of these obsidian arrow-heads, which occur in quantities in Santorin and other places where obsidian implements existed. As the prehistoric Antipariotes had obsidian close at hand on the mountain side, I take it that these graves must date from the first introduction of the use of obsidian, there being none of it in the poorer graves, and nothing but knives in the richer ones. Obsidian, of course, is found in abundance in other parts of the world; cores of it come from Hungary, from Mexico, from Tierra del Fuego. Cerro de Navajas is an obsidian hill in Mexico, formerly the Sheffield of the place before the Spanish invasion, and Cortes found the barbers of the Aztec capital shaving natives with obsidian razors. The art of making them has perished, but the theory is plain: any maker of gun-flints could do it. The Indians still have a plan of working obsidian, by laying a bone wedge on the surface of a core, and tapping it till the stone cracks, and their productions are the same as these specimens from Antiparos.

The marble found in both graveyards shows considerable skill in the working of it: vertical holes for suspension (*avxvapia*) and neatly rounded bowls, well-formed plates, and edges of different design, either a rim or bits left for ornament—all these show a great deal of skill; in fact, marble is a speciality of the Cyclades, and was doubtless, even in those times, an article of commerce, so we can hardly be surprised at a proficiency in working it existing at the very fountain head.

As to the metal ornaments found in the richer graves, they are all of very rude workmanship. A narrow twisted tongue is of silver with a large percentage of copper in it; rings of silver with the same incrustation as on certain rings found in Etruria, which cuts like horn; a band of bronze with a high percentage of copper, with an incrustation of red oxide and green carbonate of copper; and then the little silver image with a thick incrustation of chloride of silver; thus giving us silver, copper, and bronze in use at the date of these graves.

But of course the pottery is after all the most important item, and demands our chief attention, and in the poorer graves we seldom found anything else. It is important to note that, for the first time, these marble figures are associated with pottery. It

is all very rude, though there exists a good deal of artistic decoration closely akin to that on the pottery found in British barrows. The vase shaped like a sea urchin, if its spines were closed, is perhaps the best specimen I found, and on early Greek glass vessels the same decoration is observed. Most of them are very true in shape—too much so to be hand made, and we may presume that some at least were turned on a wheel. Of the incised patterns, none appear to be taken from vegetable or animal life, all being herring-bone or criss-cross; this would place our pottery anterior to that of Hissarlik, on which we see attempts at the representation of eyes, noses, and breasts. The clay is very poor, and very slightly baked; much of it is black inside, as if the pots had been dried in a closed place, so that the smoke had penetrated the clay before they were baked. I may here say it is always fragile when first found. Then again we have specimens with bits of marble in the clay to prevent its contracting. Of course no importance can be attached to the following facts, but it is worthy of remark that in a cavern in Andalusia, fragments of a vase, now in the Museum of St. Germain-en-Laye, were found with vertical tubular holes for suspension, exactly like those before us now. Similar ones have been found in Breton dolmens, and in the Museum of Nordiske Oldsager, at Copenhagen, is a vase found in Denmark, exactly like this one, covered with a lid, and having on each side corresponding perforations, through which strings could be passed. This one came from the richest grave I opened on the south-east side. A vase in the British Museum, from Porth Dafarch, in Anglesea, has exactly the same pattern on as this one, and bits of marble or quartz in the clay to prevent contraction are often seen in ancient British vases. Furthermore, figures similar to these have been found in Danish barrows, but not of marble. These points of course prove nothing, yet they are curious as prehistoric coincidences.

I must here add a noteworthy fact: I opened a small isolated grave under a projecting rock almost 200 yards from the western graveyard. In it I found the bones of a child and a lamp and pot, of a much more recent date; the grave was made in exactly the same form as the others. It is perhaps the grave of a child who died at sea, and the materials and method for making the grave were taken from the neighbouring grave. Even now, caiques remain weatherbound for weeks together in the harbour just below, and this may account for the presence of another vase of a more recent date which I found in one of these graves.

And now a few words about the graves themselves. In the first place those on the western slope are very irregular in shape: some oblong, some triangular, some square; they generally had

three slabs to form the sides, the fourth being built up with stones and rubbish. There was always a slab on the top, and sometimes at the bottom of the grave. They were on an average 3 feet long, 2 feet wide, and seldom more than 2 feet deep. In every grave here we found bones, chiefly heaped together in confusion, and most of the graves contained the bones of more bodies than one. In one very small grave we found two skulls, so tightly wedged together between the side slabs that they could not be removed whole. From this we argued that the flesh had been removed in some way before interment, differing from what Dr. Schliemann found at Hissarlik, where he says, "All prehistoric people who succeeded each other in the course of ages on the hill of Hissarlik, used cremation of the dead." I brought home one skull to Dr. Garson, and several bones.

The graves to the south-east of the island were considerably larger, and better built, containing only one body in each. Some of these were double graves, one above and one below, and in every case there was a slab or pillar on which the head rested. Curiously enough, the grave which contained most ornaments, obsidian knives, and the pot with a lid, had no bones in it. I have had the earth tested, but there are no traces of cremated bones.

Without the aid of geology nothing can be decided as to the dates of these graves; but with the assistance of geology something might be done. It would perhaps turn on two points: when was the first great convulsion of nature which changed Santorin from a lovely island called *Καλλιστη* into a mass of pumice, and when were the houses in the sea at Antiparos submerged by the breaking through the tongue of land between Antiparos and Despotico?

No tradition or allusion occurs in Herodotus, or any other early writer, about that stupendous volcanic eruption at Santorin, the effect of which must have been quite as severe as the recent occurrence in the Sunda Straits, and Herodotus gives us the traditions of Santorin as far back as the sixteenth century B.C. M. Fouqué, the French geologist who went to Santorin to study the recent eruption in 1870, stated it as his opinion that the first convulsion must have taken place twenty centuries before Christ. Tradition and geology hence combine in placing the event before the sixteenth century, and the discoveries made by the French school were of villages, prior to that event, which had been buried deeply in pumice. Except in the one point of marble, the finds at Antiparos point to a much ruder civilisation than those at Santorin, and considering the proximity of the two islands, and the large population on each, it is hardly likely that the art of making good pottery would exist in one island, and

be unknown in the other. M. Fouqué proves satisfactorily, furthermore, that considerable commerce existed between his prehistoric people and the neighbouring islands, as he found pots made of clay from Anaphi and other proofs of intercourse.

In searching for the date of this vast population which inhabited the islands of the *Ægean* sea, we are therefore carried back into the remotest antiquity, and perhaps all we can surmise is that they existed prior to the sixteenth century before Christ. From observation, I am convinced that the largest population at this period was at Paros, whereas Amorgos has furnished the richest finds. I may add here that I was told when in Amorgos that a similar grave had been opened, containing the bones of twelve individuals and several pieces of pottery and images. For this I cannot vouch, but it is quite possible, as we found the remains of three, and sometimes four, in one grave at Antiparos, and after a battle or a plague it might have been found convenient to bury in this way.

I am convinced that by a further pursuit of this subject, and by a more vigorous system of excavation than I was able to apply to it, much more of interest may be obtained, and further light thrown on the primitive race of mankind who inhabited the islands of the *Ægean* Sea.

DISCUSSION.

Dr. GARSON said that the skull from the tombs of Antiparos placed in his hands for examination by Mr. Bent, was that of an adult male of middle age. In general appearance it strikes one as being remarkable: short antero-posteriorly, and deep from above downwards in the parieto-occipital region, which is due to the rapidity with which the occiput curves downward towards the foramen magnum from the middle of the parietal region. The shortness of the cranium seems to be counterbalanced by the fulness downward of the cerebellar fossae. The cephalic or breadth index is 80·9, which shows the skull to be brachycephalic. The basio-bregmatic height-index is 79·2, very nearly the same as the breadth index. The face is orthognathous, the alveolar index being 87·1. The nose is mesorhine, with an index of 51·0. The orbits are fairly large and rounded, their index being 84·6, showing that they are mesoscene. The parietal tubera are well marked, the glabella is fairly prominent, and metopism, or persistence of the frontal suture, is present.

Comparing this skull with the Greek skulls in the College of Surgeons museum, we find it most nearly agrees in general appearance with one obtained from an ancient tomb at Ruvo, in Magna Græcia, which was found to be rich in Grecian relics; this latter, however, is considerably more dolichocephalic, as are also the Greek skulls in this museum, with the exception of one from Nola, a Chalcedic colony. I have not had an opportunity of examin-

ing the ancient Greek skulls in the museum of Netley Hospital, but from the account of them given by Dr. Williamson, dolichocephaly seems to be the rule among those also. For the sake of comparison I have placed side by side with the measurements of this skull from Antiparos those of what is usually considered to be a typical Grecian skull obtained from Cuma, an Eolic colony, from which it will be seen that the former differs considerably.

The small amount of material we possess of the ancient Greeks renders this a very acceptable and valuable addition, and it is earnestly to be hoped that more skulls, and if possible, skeletons, or at least the long bones, will be obtained and placed in our museum, so as to enable us to study the osteological characters of this once great and famous nation, more fully than is possible at present. It is very desirable also to procure some more skulls and skeletons from the same tombs in Antiparos, so that we may be able to decide whether the characters presented by this skull are peculiar to it, or are of a racial nature.

	Skull from Antiparos.	Skull from Cuma.
Length (maximum) ..	178	188
Breadth (maximum) ..	144	139
Cephalic index ..	80·9	73·9
Height ..	141	129
Height index ..	79·2	68·6
Circumference (horizontal) ..	510	525
Basio-nasial length ..	101	105
Basio-alveolar ..	88	102
Alveolar index ..	87·1	97·1
Nasal length ..	51	53
Nasal breadth ..	26	25
Nasal index ..	51	47·2
Orbital width ..	39	37
Orbital height ..	33	35
Orbital index ..	84·6	86·7

Mr. HYDE CLARKE said the objects brought before them by Mr. Bent, and illustrated by Dr. Garson, were of particular value as confirming the researches communicated by himself to the Institute and to the Royal Historical Society, as to the early epoch of culture. All discoveries tended in the same direction of throwing back the origin of culture to a period more remote than was generally contemplated. What had been regarded as original in Egypt and Babylonia were now known to have been developments from an antecedent epoch. Thus even the Akkad was felt to have had its predecessor. There were still notions prevalent that Phoenician or Egyptian sources were to be assigned as the origin of everything. He was not surprised that Dr. Garson did not find the skull to agree with Grecian skulls. For it was to be remembered that the period with which Mr. Bent dealt was one before the Aryans appeared on the scene, and it was rather to be expected, as he himself had stated, that members of several races took part in the settlements at Antiparos and elsewhere, speaking, as he had shown in the paper on the Autonomous Coins,

distinct languages. It was quite within compass that higher and ruder forms were contemporaneous, while if a slave race survived its leaders, the inferior workmanship would also survive. The communication of Mr. Bent was to be regarded as of great importance, as Antiparos was of decidedly prehistoric or protohistoric character. Calamine had lately been discovered in Antiparos, and the working of this in prehistoric times may account for the large population, as the abandonment would for the departure of the inhabitants at a later date.

JUNE 10TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From the AUTHOR.—*Nègres et Civilisation Egyptienne.* By Gabriel de Mortillet.

— *Sur la Fossette Vermienne du Crâne des Mammifères.* By M. le Professeur Paul Albrecht.

— *The Temple of the Andes.* By R. Inwards.

From the GERMAN ANTHROPOLOGICAL SOCIETY.—*Correspondenz-Blatt.* April, May, 1884.

From the ROYAL ACADEMY OF COPENHAGEN.—*Oversigt over det Kongelige Danske Videnskabernes Selskabs.* 1883, No. 3; 1884, No. 1.

From the ACADEMY.—*Bulletin de l'Académie Impériale des Sciences de St. Petersbourg.* Tom. XXIX, No. 2.

From the ASSOCIATION.—*Journal of the East India Association.* Vol. XVI, No. 3.

From the MUSEUM.—*Annual Reports of the Peabody Museum,* 16, 17.

From the SOCIETY.—*Bulletin de la Société d'Anthropologie de Bruxelles.* Tom. II, Fas. 3.

— *Proceedings of the Royal Geographical Society.* June, 1884.

From the EDITOR.—“*Nature.*” Nos. 761, 762.

— *Revue Politique et Littéraire.* Tom. XXXIII. Nos. 22, 23.

— *Revue Scientifique.* Tom. XXXIII, Nos. 22, 23.

— “*Science.*” Nos. 67, 68.

— *The Science Monthly.* Vol. I, No. 8.

The following Paper was read by the Director :—

On the Deme and the Horde.

By A. W. HOWITT, F.G.S., and LORIMER FISON, M.A.

TWENTY or thirty years ago, if any one had hinted at the remote possibility of there being the slightest resemblance between the social structure of the Attic tribes and that of the Australian aborigines he would have been looked upon as a madman; and even nowadays an assertion to that effect may perhaps be received with ridicule. Nevertheless, we do not hesitate to assert that there is a very close resemblance between the two, not only in general organisation, but even in usage, which affords a valuable addition to the fast accumulating evidence in proof that much of later custom in civilisation can be traced to very ancient practice in savagery.

In endeavouring to show this, it will be necessary for us to go over certain ground which has already been surveyed and mapped out by ourselves as to the Australian organisations, and by others as to those of Attica. For this we must crave the reader's indulgence. We have also to promise that, while we state without hesitation, and perhaps even with some little modest approach towards authority, what we have ascertained by our own investigations to be facts in savagery, we have no such confidence in our ability to state with fulness and accuracy the other part of our subject. This we present, under submission, to the judgment of competent scholars.

§ 1. *The Australian Horde.*

Among the Australian aborigines there are divisions of the community determined by locality—geographical divisions—and there are also divisions on which the marriage regulations are based. The former are distinguished by certain local names, in a few cases by eponyms, while the latter are denoted by "class-names,"¹ or by totems—frequently by both class-names and totems. In the aggregate of the whole community these two sets of divisions are conterminous, but no division of the one set is conterminous with any division of the other. That is to say, the people of any given locality are not all of the same totem, nor are the people of any one totem in the community collected in the same locality.²

¹ Class-names, so called by us solely for the sake of convenience, and because they cannot always be positively asserted to be totems, though the strong probability is that they are always totems.

² This is the general rule. But a few exceptions are known to us, where the local organisation has prevailed over the social, the line of descent has changed to that through males, and all the people in a certain locality have come to bear the same totem.

We have perceived that we were misunderstood to affirm in our joint work, "Kamilaroi and Kurnai,"¹ that "the members of a class, or totemic division, live in a community apart from those of other divisions." In order to prevent further misconception on this point, it seems absolutely necessary to fix upon some term which shall unmistakably indicate the *local* divisions as distinguished from the *social*. In a short memoir entitled "From Mother-right to Father-right,"² we called them "local clans." But the term "clan" is misleading when applied to people who have descent through the mother, and it had better be kept exclusively for those who follow the other line. The very sight of it suggests agnation, and the mind refuses to remain continually on its guard against old impressions. Too frequently it takes in the report of the eye without testing its accuracy. In the place of "local clan," we therefore now propose the word HORDE for want of a better. This at least is not so likely to be misunderstood.

By horde, then, we mean a certain geographical section of an Australian community which occupies certain definite hunting-grounds. Its members are of different totems. In fact, all the totems of the community may be represented in any given horde. Descent being through the mother as the general rule, the child is of its mother's totem, not of its father's. *But it belongs to the horde in which it was born.* Bearing these two facts in mind, we may now get a clear view of the two organisations for comparison with those of Attica.

§ 2. *The Constitution of the Two Organisations.*

a. An entire community—nation, tribe, or whatever else it may be called—of Australian blacks is divided socially into two principal exogamous intermarrying sections, A and B.³

Each of these sections has exogamous subdivisions, distinguished by totems.⁴ But since their sum = A + B, we need

¹ "Kamilaroi and Kurnai." George Robertson, Melbourne; London: Macmillan.

² "Journ. Anthropol. Inst." for August, 1882.

³ This is the statement of a very extensive rule—which, however, has a considerable number of exceptions. The four classes of the Kamilaroi and other tribes are not specially considered in this memoir; nor is there any need to consider them specially, for it is now positively ascertained that they are subdivisions of two primary sections.

⁴ The main sections themselves are frequently, probably always, so distinguished. What we have called class-names have been found in some cases to be "major totems," as distinguished from the minor totems of the subdivisions. The probability is that they are all totems. A hostile critic has told us we "do not see that by making this admission we throw up the anthropological sponge." He is quite right: we did not see it. Nor have we yet been able to perceive it. His view requires the taking for granted of a certain origin of the totem, and that is begging a very large question in dispute.

not take them into account for the present. They will come in farther on.

This we have called the *social* organisation.

B. The community is also divided geographically into a number of hordes, X, Y, Z. We take three for the sake of convenience. There may be many more.

This we have called the *local* organisation.

X is made up of individuals belonging to A, and of others belonging to B; so is Y; so is Z.

The children of the horde belong to the horde—e.g., the children of X males are of X horde, and so forth.

But since A (male) must marry B (female), and descent is uterine, the son of XA is XB. In other words, the son is of the father's horde, but of the mother's totem—of the local division to which the father belongs, but of the mother's social division.

Frequently we find the hordes to be exogamous as well as the social divisions,¹ probably a later regulation to prevent close intermarriage—as if an English village were to determine that its children should marry beyond its bounds, the sons bringing their wives to the village, while the daughters go to their husbands' villages. In this case XA (male) must marry YB or ZB (female), but his son is XB still.

§ 3. *Aggressiveness of the Local Organisation.*

The local organisation is hostile to social ;—not consciously so, in the minds of the natives, but from the very nature of things. In fact, it is the earliest germ of the State. Its tendency is to modify and contract the range of the social organisation, to usurp its authority, to bring about descent through males, to arrange society on its own basis, and finally to make itself paramount.

This tendency is plainly to be seen even among the Australian hunters, and it is far more clearly perceptible among agricultural tribes. But to state this in full would be merely to repeat the greater part of our paper, “From Mother-right to Father-right.”

§ 4. *Mother-right.*

Before we go any farther let us be quite clear as to what descent through the mother involves. *It has to do with the social*

¹ But there is the clearest distinction between these two exogamous laws. Breach of the social law of exogamy is a capital felony, causing pollution and punishable by death. Breach of the local law is a simple misdemeanour. The distinction between the two offences is like that which lies between the worst kind of incest and running off with a ward in Chancery. The latter is doubtless highly reprehensible, and to be severely punished, but it does not cause pollution.

organisation only: it does not touch the local. We have seen that it does not take the son away from the father's residence, and we may further note that it does not remove him from under the father's authority. The daughter may go away when she marries, but the son remains in the father's horde. He is under the dominion of the father.¹ He is even recognised in some tribes as the actual re-incarnation of the father. "Here I am, and there you stand with my body!" cried an old blackfellow to his disobedient son, "There you stand with my body, and yet you won't do what I tell you."² But in spite of all this, the son is of the mother's social division. He is Dilbi or Kupathni,³ Eaglehawk or Crow, as his mother was before him, and as his father was not.

This at first sight may appear to be merely the inheritance of a name. But the name is a word of power. It carries with it a marriage right and a marriage obligation, a paternal right and a paternal obligation, involving many important duties and privileges. Among nomad hunters like the Australians it has little or no concern with inheritance, for the simple reason that there is little or nothing to inherit, except a hunting right which is common to all members of the horde, of whatsoever social division they may be. The succession of the son to the father's horde can scarcely be called inheritance from the father. It is mere continuance in the locality where he was born. But among agricultural tribes who have descent through the mother the land goes with the "name."

§ 5. *Aliens.*

In addition to the born members of a community there may be a few aliens—war-captives taken in boyhood, and others who have been admitted into a horde and furnished with wives. If the captive be of a tribe which has the social organisation of his captors—as he very usually is, for this organisation extends over a vast area—there is no difficulty in his case. Indeed he is not really an alien, for he belongs to either A or B, and is matri-

¹ Our statement in "Kamilaroi and Kurnai," p. 74, that "the father is utterly ignored," has been entirely misunderstood. We were dealing with the line of descent, and with that alone, as the context plainly shows. In accordance with the group-relationship prevailing among the Australians, the son may have "many fathers" nominally, and a number of men may have access to his mother. But his putative father is the man with whom his mother habitually cohabits.

² It must be noted, however, that the tribe to which this man belonged had advanced to descent through the father.

³ Dilbi or Kupathni. These are the two primary sections of the Kamilaroi, of which Ipai, Kuneah, Muri, and Kubi are subdivisions. Though theoretically inferring their existence, we had not discovered them when we published "Kamilaroi and Kurnai." We have now not only been able to establish their existence in the Kamilaroi, but also as tribes existing in other tribes far northward into Queensland.

monially placed accordingly. But since there are tribes which have not this organisation, and captives from them are occasionally admitted into a horde by tribes which are so organised, it is necessary to take aliens into consideration.

The alien woman, if she is really an alien, is, in many if not in all cases, brought before the elders, who decide as to who shall have her. Apparently she is feigned to belong to some one of the totemic divisions which furnish wives to the man who takes her, and any children she may have are placed in that division. It may be, however, that the elders are able really to determine what totem in their tribe is the analogue of her own. This is certainly the case in the Carpentaria tribes, where class systems are at first sight entirely dissimiliar.

§ 6. *Summary.*

From the foregoing we get three clear equations:—

$$\begin{aligned}\text{The whole community} &= X + Y + Z \text{ (which take in aliens).} \\ &= A + B + \text{aliens.}\end{aligned}$$

$$\text{Hence } X + Y + Z = A + B + \text{aliens.}$$

That is to say, the sum of the local divisions is equal to the sum of the social divisions, leaving aliens out of the account. An alien may become a member of X, Y, or Z, but he cannot become a member of A or B. His child, however, will be admitted, because its mother is either A or B, and it will have her totem.

The main Australian facts may now be compared with those which present themselves in Attica. Let us recapitulate them in order to keep them clearly before our minds:—

1. Two distinct and essentially different organisations, each of which (eliminating the aliens) includes the whole community. They are conterminous in their entirety, but non-conterminous as to their parts.

2. Exclusion of aliens from the organisation, which is based on descent.

3. Admission of the children of naturalised aliens into the exclusive organisation, by virtue of a right derived from their mothers.

4. Tendency of the local organisation to modify, and finally to supplant, the social.

5. Subdivisions of the main sections of the social organisation into minor sections, which are genealogical, exogamous, and of uterine succession.

§ 7. *The Two Organisations in Attica.*

It is clear that there were in Athenian society two great organisations: one based originally on locality, and another whose sole qualification was that of birth. But the difficulty in the way of distinguishing one from the other, and of determining the relations which they bore to one another, is increased by the fact that the later Greek writers themselves are confused in their accounts of them. As Wachsmuth says, in his invaluable work on the "Antiquities of the Greeks":¹ "The accounts of the grammarians . . . are written without proper attention to the subject, and are incomplete and misplaced. In attempting to explain the nature of the divisions² they constantly confound one with the other; but still the real fact that they were essentially and not merely nominally different may be gathered from their pages."

These divisions may be examined in the *Demes*³ as distinct from the *Phratries*. The demotic is the local organisation; the phratrerial is the social. The demes were a political organisation, artificially and arbitrarily constructed in the first instance, but they were originally arranged on the basis of locality.⁴ Having been once constituted, they had a genealogical continuance because the son entered his father's deme; and probably they lost their local character to a considerable extent, owing to the removal of members to other localities. No provision seems to have been made for a change of settlement, excepting in cases of adoption. It was as if a Middlesex man, removing to York, still retained his Middlesex rights and obligations, but acquired none at York.

Both the organisations—the demotic and the phratriac—included the free-born citizens; and therefore (leaving out of

¹ Woolrych's translation, p. 343.

² Wachsmuth speaks of three kinds of divisions, those of "caste," as well as the phratriae and the demotic. We take the last two only into consideration, not troubling ourselves with divisions such as *εὐπατρίδαι*, *γεωμόροι*, and *δημοῦροι*. These seem to have been based on rank, or hereditary occupation. They do not effect either of the two great organisations.

³ Of course we do not mean that the Attic deme is *per se* anything like the Australian horde. The ancient geographical divisions of which the demes were the modern representatives would be more to our purpose, though even these would not take us back to the horde of nomad hunters. But we know little or nothing about them beyond their names, and these do not always tell us with certainty even as much as what sort of divisions they were.

⁴ Some of the demes bore the names of clans, not of localities. It seems likely that in some cases, especially in the country, when Kleisthenes arranged the demes, certain localities may have been occupied, chiefly at least by powerful clans with their retainers—as one might say, by certain Macs and O's, and in such cases the name of the deme might be derived from the clan, and not from the locality.

the account the aliens, who were admitted to the former, but not to the latter), the two coincided in the aggregate. *But no deme coincided with any phratria, or with any subdivision of a phratria.* The members of the one organisation were scattered among the divisions of the other.

§ 8. *Aliens.*

The statement that the two organisations were conterminous in the aggregate must be qualified, as in the Australian parallel, by the elimination of the aliens, because, though every phrator was a demote, every demote was not necessarily a phrator.¹ The naturalised alien was enrolled in one of the demes, but there could be no admission for him into a phratria. He lacked the indispensable qualification of birth. If, however, he obtained the right of *ἐπιγαμία*, and married a free-born woman, his children by her were not excluded. They were enrolled in her father's phratria, the relationship between a child and its maternal grandfather being looked upon as a very near tie of blood. Isaeus even maintains that it is nearer than the tie between own brothers, on the ground that a man's daughter is nearer to him in blood than his own brother, the former being begotten *ἐξ ἐκείνου*, the latter only *μετ' ἐκείνου*.² This, however, may be only a lawyer's quibble; but it seems likely that we find here the true explanation, not only of Aristophanes' skit upon Exekestides, *φύσατω πάππους παρ' ἡμῖν καὶ φανοῦνται φράτερες*,³ but also of that upon Archedemos, *ὅς ἐπτέτης ὥν οὐκ ἔφυσε φράτερας*.⁴

The fact that the child of a naturalised alien by an Athenian mother was registered in its maternal grandfather's phratria will account for both *φύσατω πάππους* in the former, and *ἔφυσε φράτερας* in the latter. The hit at Archedemos has indeed been taken to mean that he had failed to obtain citizenship;⁵ but the real meaning seems to be that, though he was a naturalised demote of seven years' standing, he had not been able to get a free-born woman to wife, and therefore had produced no phrators. His mere admission to citizenship could not give him phrators; and were nothing more than this referred to, the gibe would miss its point.

In Australia we have seen that the child of an alien was

¹ This and other matters it is necessary to state in full, though nobody disputes them, in order to exhibit the striking parallel afforded in the low savagery of Australia.

² *De Cir. Her.*, 217.

³ *Aves*, 765.

⁴ *Ranæ*, 419.

⁵ Fritschius annot.: "Qui, quum diu Athenis esset, nondum civitate erat donatus." Paley follows to the same effect.

admitted to the social organisation by virtue of descent through the mother. It received its mother's totem, and it is a curious fact, well worth noting, that even at Athens, where the line of descent was through males, maternal descent was regarded more than paternal, as far as the children of aliens were concerned. For, though the child of a naturalised alien man could be admitted into a phratry if its mother were a free-born woman, the child of an alien woman could not be admitted, even though its father were free-born and high-born. At all events it could not be legally admitted, though the law seems to have been disregarded in later times. No such child could be legitimate. The marriage of a citizen with an alien woman was forbidden under heavy penalties, and all the children of such cohabitations were *παιδες ἀλλοτρίοι*.¹

The Australians could not afford this arrangement, for a woman was too valuable an acquisition to be repelled. So they admitted the alien captive, and placed her under one of their totems.

§ 9. *The Two Aliens.*

The distinction made by the Australian blacks between the two aliens, of whom one belongs to a tribe having a like social organisation with that of his captors, and the other to a tribe not so organised, is like the Greek usage, though not precisely on all fours with it. The one is indeed a stranger from beyond the community, but he is not (as one may say) from beyond τὸ Ἑλληνικὸν. The other belongs τῷ Βαρβάρῳ with which the very thought of any kind of union was indignantly repelled as utterly monstrous and repugnant to humanity. And as in Australia the social organisation, though a complete entity in any given community, extended far beyond it over vast areas, and formed a real, though not a very powerful bond of union, keeping up a feeling of kindred among the tribes it covered—so also in this widest sense it may be said to have taken in, not Attica only, but the entire Hellenic race.²

¹ Dem. C. Neer, 17. Why this should have been so in Attica, where descent was through the father, it is not easy to explain, on any theory which rejects the possibility of former uterine succession. But if we can take the practice as a survival of former descent through the mother, the explanation is clear and easy. For it is the direct logical consequence of descent in that line, and we are told by Herodotus that it was accepted in actual fact by the Lycians who had descent through the mother.

² Herod., viii, 144; τὸ Ἑλληνικὸν ὃν δραμον τε καὶ όμογλωσσον, καὶ θεῖν ιδρύματα τε κοινὰ καὶ θυσία, ἥθεα τε ὅμορπα. In the early days of Australian colonisation the blacks admitted white men into their communities readily enough—Buckley, for instance. But in cases such as his they were not looked upon as aliens. The natives supposed Buckley to be one of their defunct warriors, *redivivus*, and he was therefore in no sense an alien, but

§ 10. *The Two Jurisdictions.*

Though the two organisations in Attica, as in Australia, were co-existent, mutually interpenetrating, and (eliminating the aliens) conterminous in the aggregate, they were essentially distinct, each having its own regulations, its own offices, its own festivals, and its own jurisdiction. Thus, in the oration against Necera, we find Stephanos accused of offending against two different sets of men, by bringing alien children for enrolment both to the phrators and to the demotes.¹ Here we have two distinct tribunals before which children had to be brought for enrolment in the two organisations. That these tribunals were composed of different sets of men is certain, because (as several writers have pointed out) Phrastor, Necera's son-in-law, belonged to the deme called Hekale, and his son must have been presented for enrolment in that deme; but of the six γεννῆται belonging to the phratria with himself, and to the same subdivision of the phratria, who testified that they had voted against the admission of his son among the phrators, only one belonged to Hekale, the other five being members of as many different demes.

We have here, not only a clear distinction between phrators and demotes—between the social organisation and the local, but also what is far more interesting and important, a clear and most instructive distinction between the nature of the offence against the former and that of the offence against the latter. The one is a breach of morality “doing despite to the gods”; the other is a civil wrong “defrauding his deme of its lawful gains.”² The latter is a case for the law-courts; the former comes under the jurisdiction of the phratriac tribunals.

The distinction between these two jurisdictions seems to be clearly marked. The former administered what we may call the Law of Enactment, the latter dealt with the Law of Custom. In ancient times, when there was little or no law of enactment,

would have attributed to him the totem—whatever it may have been—as well as the name of Murangurk. The natives very generally looked upon white men as ghosts. This was no unreasonable theory among tribes who believed that the individual could during sleep leave the body and wander about, or who subjected their departed friends to a slow wasting until the epidermis loosened and peeled off, showing the white skin beneath it. This custom cannot be said to have been general, but then very many of the tribes are cannibals, and doubtless often witnessed the phenomenon in their practice of the culinary art. A good example of the adoption of an alien would have been afforded by John King had he not been rescued before the process was complete. When found living with the Yantruwunta tribe he was certainly adopted to some extent, and would have been completed in the course of time.

¹ Necera, 17: ἀλλοτρίους πάϊδας εἰσαγαγόντα εἰς τε τὸν φράτερας καὶ εἰς τὸν δημότας.

² ἡσεβηκότα δ' εἰς τὸν θεοὺς—ἄκυρον δὲ ποιοῦντα τὸν δήμον τῶν αὐτοῦ.

the phratriac tribunals were undoubtedly real judicial bodies with very great power in their hands ; but in the later days they had been completely set aside in all civil matters. As much of the old customary law as it was necessary to adopt had been formulated and made into common law by enactments, and little was left to the old tribunals but questions of morality and religion.¹

§ 11. *The Areiopagos.*

Of these phratriac tribunals it seems clear that the highest was none other than the Areiopagos itself. Judging from what we find elsewhere, we may suggest that originally it was the Great Council of the Elders from all the phratries, who were the depositaries and exponents of the customary law—the men who, before the rise and establishment of hereditary chieftainship, were those who were qualified to pronounce with authority, “Thus and thus say the gods,” and before whom flagrant offenders against custom, and therefore against the gods, were brought for trial, minor culprits being dealt with by each phratry in its own council. Though formerly awful in sanctity and all-powerful in action, it was completely shorn of legal authority in later times, and reduced to the singular position of a tribunal dealing with SIN, offences which made the gods angry, as distinguished from crime and tort, offences of which the State took cognizance.²

And even in the matters which were left to its jurisdiction, we are expressly told that it had no power to punish ; and that, if it did so, it must keep its proceedings secret. Thus, in the case against Neœra, we find it secretly inflicting a heavy fine on the King-archon without having any legal authority for so doing, “in secret and with a decent regard to appearances, for they have no power of their own to punish any Athenian at their will.”³

With our modern notions we stand amazed and almost incredulous before a record such as this. To us it is as if an Anglican Synod, or a Presbyterian Assembly, or a Wesleyan Conference, had

¹ Customary law is essentially religious. For custom is determined by the practice of the ancestors, and they are the gods.

² But we must remember that there was no such distinction in the minds of men in very ancient times, any more than there is in the minds of savages at the present day. Sin—to them but another name for breach of custom—was crime and tort and treason against the community. It is true that murder was left under the jurisdiction of the Areiopagos, but this does not tell against our view. For murder was sin in the sense in which we have used the word. Anywhere within the community—according to the widest range of the old notion, which, however, became contracted in more modern times—it was shedding the “blood of kin,” an impious offence which it was the express function of the Erinyes to avenge. Killing an alien was mere homicide, but there was no guilt attached to it—the gods were not concerned.

³ ἐν ἀπορρήτῳ δὲ καὶ διὰ κοσμίοτητος ὃν γὰρ ἀυτοκράτορες εἶσιν, ὡς ἀν
βούλουσται Ἀθηνᾶς τινὰ κολασίαν.

fined a prominent Church-member in the amount of a considerable fortune for taking unto himself a wife from among the ungodly.¹ But the Athenian seems to have perceived no incongruity in it. He had taken his legal business out of the hands of his ancestral gods, as represented by their great tribunal, but he still kept up an appearance of profound submission to their jurisdiction, *because he was afraid of them*. Even the most advanced thinkers had very likely somewhat of the old dread still lingering deep down in the secret recesses of their hearts. At all events, if they had not, they were wise enough to keep their opinions to themselves.

Nothing can be more instructive than the Necera case in showing how completely, for all practical purposes, the new order had shelved the old, even though the utmost reverence was still professed for the latter. It was all very well for the plaintiffs' counsel to denounce with virtuous indignation Stephanos' offences against phratriac law in order to serve his purpose in a civil suit. But it is evident that the old regulations, though reverenced, were practically disregarded, and that the heinousness of an offence against them—like that of the Fijian's “entering his brother's house,” to use the decent euphemistic phrase—lay in its being a matter of public notoriety. It is simply incredible that an alien woman so notorious as Phano, daughter of a mother more notorious still, could have been palmed off upon the King-archon as a full-born virgin, without his connivance, and it is certain that if a money squabble had not arisen there would have been no action taken against Stephanos on the score of outraged morality. The insulted gods would have been left to take care of themselves. It is true that the Areiopagos accepted the King-archon's plea of offence through ignorance; but it may well be asked, if they had repelled it could they have enforced the fine? If a Greek of that day—and an Athenian Greek to boot—were under no legal obligation to pay so much as a single *obolos*, what power on earth, with no torture-chamber at its command, could have screwed several thousand *minæ* out of him? The proceedings before the Areiopagos have all the appearance of a solemn farce.

But if any one of the few substantial rights which had been left to them were invaded, they still had power enough to assert themselves effectually, and even to reverse the decision of the

¹ The gravamen of the charge against the King-archon lay in the fact that Phano was an alien. As his wife, she, an alien woman, administered the oath to the priestesses of the Bacchic Mysteries, was herself “given in marriage to Bacchus,” and looked on secret rites which none but women of full birth could dare to see. The aliens were literally “the ungodly.” They had neither part nor lot in the gods.

Ecclesia itself, as in the case when the Assembly elected Æschines to represent Athens at the Amphictyonic Council. This was clearly an invasion of their rights, for the Amphictyonic league was distinctly an affair of the social organisation of which they were the representatives in Attica. It was a league of affiliated tribes, not of confederated states ; that is to say, it had a genealogical, not a political basis. By its election the General Assembly had invaded the clear right of the Areiopagos. It was as if the British Parliament had taken upon itself to say what Catholic bishop should represent England at the last Ecumenical Council.

But, after all, this was in reality no very great matter, for even in early times the Amphictyonic Council had lost so much of its influence that Demosthenes could speak of it contemptuously as of "that shadow at Delphi."¹ We do not find him speaking thus of the Areiopagos itself. The politicians of that day knew that it still had a strong hold upon the reverence of the masses—the sons of the men who had burst into a wild storm of fury, excited by fear, at the mutilation of the statues of Hermes. So they were always careful to speak of the august tribunal with the highest respect ; but they were equally careful to keep all real authority in civil and political matters out of its hands.²

¹ *De Pace*, edd. Priestley, p. 82.

² It is well to note here what the nature of the jurisdiction is, which is exercised by what may be termed the Great Council of an Australian tribe. A very good instance is afforded by the Dieri tribe. It occupies the delta country of Corpus Creek, on the eastern side of Lake Eyre in South Australia. It is the central tribe of a group of at least nine, whose aggregate territory extends fully three hundred miles north and south and east and west. Besides personal acquaintance with several of these tribes, acquired before their country was occupied by the whites, we have received a very full report from Mr. S. Gasco, who, as an officer of the South Australian police, lived for six years in the Dieri country, and not only acquired the language but also became an initiated member of the tribe.

What may be well called the General Council of the Dieri tribe consists of all the fully initiated men. Within this there is the Great Council, composed of all those men who are venerable through age, or eminent by reason of same mental or physical superiority combined with years. It includes, therefore, the extremely aged men, the heads of totems (*murdurs*), the principal warriors, the great orators, the powerful wizards ; and the most eminent man of them all becomes the headman of this council.

Within the last fifteen years, if not even now, it was the headman of the *Manyura Murdu* who presided over this council. The *Manyura* is the *Portulaca oleracea*, and this vegetable is one of the most valued of the food resources of the Dieri. The headman of this *Portulacea* totem prided himself on being the "root of life." He is described as a persuasive orator, and a renowned wizard, who professed to be guided in his counsels by dreams and visions from the great spirit *Kuchi*. The Great Council of the Dieri holds its meetings in secret, and to wrongfully reveal its deliberations is deemed worthy of death. It decides upon the times on which the great ceremonial meetings of the tribe are to be held, including the several successive initiations, and the propitiatory ceremony to produce rain in times of drought. It allotst to each other those who under the Dieri form of group-marriage thenceforward became "accessory" husbands and wives to each

§ 12. *The Two Qualifications.*

The distinction between the qualification for membership in the phratric organisation and that for *full* admission into the demotic, finds a striking parallel in the Australian usage.

A child became a member of its father's phratia at birth, or at least as soon as it had been presented at the ancestral altar, and accepted by the phrators as the true seed. But not so with the demotic organisation. Though the son became a member of his father's deme, he was not formally admitted until he had gone through a long period of probation. Not until he had reached the age of eighteen, and had passed two years in the gymnasium, was he armed in the presence of the assembly, registered in his deme, and qualified to look for a wife. Even then he had still to serve two years on the frontier before he could take his place in the assembly; that is to say, the qualification for the admission of a born citizen into the demotic organisation was proof given that he was qualified to take his place in the community, and to contribute to its defence.

This is wonderfully like the Australian usage. In tribes which have uterine descent a child becomes at birth a member of the social division to which its mother belongs. In all the tribes with which we are acquainted a boy is by birth one of his father's horde, but he cannot exercise either his totemic or local privileges until the men of the community, assembled in their local organisation, formally admit him to them. This will be made clear by a short review of the main points of Australian initiation ceremonies.

(1) The ceremonies are held by the assembled community periodically; the community being the aggregate of hordes, or of tribes between which there is epigamy. The community is divided into two exogamic sections, neither of which can by itself initiate its youths.

(2) At the age of puberty the boy is taken from his

other. It also sends out embassies to its kindred tribes, and declares war and proclaims peace. It tries persons charged with offences against the tribal welfare. For instance, within our knowledge it punished with death a man who had acted as guide to a party of white men, who thereupon took possession pastorally of part of the Dieri hunting and food grounds, to the manifest injury of the tribe. It also tries persons who are charged with offences against the moral code of the community, as, for instance, such who, being "Buyuluparchuna" to each other, have disregarded the prohibition of marriage which is attached to that relation. This term, which means "all near relations," has become one of the most insulting expressions which it is possible to apply to a Dieri man or woman, from the implied meaning of "incest" attached to the words. The Great Council of the Dieri tribe deals, therefore, with crimes and moral offences, as we should call them; that is, with offences against both the local and social organisations.

mother and the assembled women by the initiated men—that is, by the local organisation. He undergoes certain ceremonies which are partly personal to himself, as circumcision, or the extraction of a tooth, and partly instructive, as by his being taught the ancestral laws which govern the relations of the sexes and the general morality of the tribe. The ceremonies have in some tribes a quasi-religious character, as where the youth is taught the existence of a great spirit by whom first the initiation ceremonies were instituted, who still watches them when they are being held, and who will punish by sickness, or perhaps death, the disregard of his laws, such as those which forbid to the novice the use of certain food during his probation. Some parts of the ceremonies are symbolical, as when the youth is invested with the "belt of manhood," or where his mother does some act signifying the termination of her maternal control over him.

(3) The period of probation which follows the initiation is intended to test the youth's power of self-restraint, as well as his skill as a hunter; for he is forbidden to eat certain food animals, some of which are more nutritious than those which are permitted to him, while others are more plentiful. Thus in the midst of plenty he is placed in circumstances of scarcity, and being banished from his kindred he is thrown upon his own resources. We have known this period of probation to last nearly twelve months.

(4) It is only when the elders of the tribe—*i.e.*, the Great Council—are satisfied with his fitness to rank with the men that the novice is recalled to his horde, and, after a still further period of probation, permitted to acquire a wife in that mode which is customary in his tribe. He is now permitted to attend the general assembly of men, but is not yet permitted to speak during council. He is expected to preserve a respectful and attentive silence, and it is only as he grows older that he actually participates in the discussions that take place. We have noted as one of the marked features of such a general council the silent attention with which the young men receive the directions of the elders.

Thus it is that the right which comes to a boy at birth with his inherited name to obtain a wife from among the women of that totemic group (class, sub-class, or totem) with which his is epigamic, cannot be exercised by him without the permission of the local organisation. We have heard the novices forbidden by the old men to exercise such inherited privileges until permitted to do so in the lawful manner. In some tribes within our knowledge a certain amount of informal previous indulgence is allowed to novices during their probation, yet there

also the formal exercise of the right acquired by birth is not permitted until the old men—that is, the council of the tribe—are satisfied as to the youth's qualifications. The inherited right and its restriction come out very clearly in the Kamaroi instance, as stated to us by Mr. Naseby of Maitland, N.S.W., who has had fifty years' acquaintance with that tribe. The youth, after having attended a sufficient number of initiation ceremonies, is free to marry, and according to tribal law may select any unappropriated girl of that class, sub-class, and totem with which his own is epigamic, always provided that she is not within any of the forbidden degrees of relationship to him, and that his hands are free from the blood of her kin. The wrongful exercise of this inherited privilege—that is, its exercise before the youth has received the formal sanction of the local organisation—is punishable by death.

§ 13. *Summary.*

Thus far our case seems tolerably clear, and may be summarised as follows:—

a. The Attic community was divided into sections, whose qualification was solely that of birth. These were ancient, natural, and religious.¹

B. It was also divided into other sections based originally on locality. These were modern, artificial, and utilitarian for civil and political purposes. But they were the modern representatives of far older geographical divisions. They did not destroy or even modify the structure of the other organisation, though their ultimate tendency was to do away with it altogether. They simply ignored it for all State purposes, and left it to manage its own concerns.

Making all necessary allowance for difference of culture in the two peoples under view, and especially for the difference in their lines of descent, we think we may now safely say that—

The former of these two organisations—the phratriac—is analogous to what we have called the social organisation of Australia. These are the *φύλαι γένικαι*.

The latter—demotic, or rather the old geographical division,

¹ The demotic organisation had its own religious apparatus; but this was artificial, not organic. The phratriac gods grew: they were the ancestors. The demes "made unto themselves gods." The founder and the promoters of the democratical organisation were men far too astute to leave the vast power of religion in their rivals' hands. They were as wise in their generation as Jeroboam, the son of Nebat, was in his. They did not adopt "strange gods," they put the demes under the protection of those with whom the people were familiar. So old Jeroboam set up gods which were known to the Israelites of old, and he quoted Aaron the great high priest as their guarantee, "Behold thy gods, O Israel, which brought thee up out of the land of Egypt."

far older than the *naucrarias* which were superseded by the demes—are analogous to the Australian hordes. These are the φύλαι τόπικαι. They must always have existed in Attica side by side with the phratries, unless there was a time when every geographical division of the people coincided with a genealogical division.

§ 14. *The Genos.*

We now come to a very important question, which is far from being clear, but which we think is capable of being cleared.

We have already pointed out that in Australia the two primary sections of the community are subdivided, and that the subdivisions are distinguished by totems. Of these totems there are two distinct sets, one of which belongs to one of the primary sections, while the other set belongs to the other primary section. Reverting to our formula for showing the constitution of an Australian community, and taking one set of totems as *a, b, c, d, &c.*, and the other set as *l, m, n, o, &c.*, then—

$$\begin{aligned} A &= a + b + c + d, \text{ &c.} \\ B &= l + m + n + o, \text{ &c.} \end{aligned}$$

All persons in the community who bear the same totem are looked upon as of common descent, and they are considered to be so closely related that no *connubium* can be permitted between them.¹ In other words, the totemic division is genealogical and exogamous ; and the question is, can we find any subdivision of a phratry which is analogous to it ?

That there were subdivisions of the phratries—γένη—no one disputes ; but it has been positively asserted over and over again, by the very highest authorities, that the γένος was not a genealogical clan, and that its members were not connected by any tie of relationship.

It seems even to have been doubted whether it was really a definite corporation, with a separate existence of its own. It is not without fear and trembling that we advance to the attack of a position which is armed by such a weight of authority, and we must ask the reader to bear in mind that, on this part of our subject, as we said in our introductory remarks, we claim nothing more than permission to state our case, “under submission, to the judgment of competent scholars.” We venture to think it can be shown that the *Genos* was a distinct corporate body, the constitution of which can be accurately determined ; that it was a

¹ Some of our critics have denied most positively that these are real relationships. All we can say is that the natives consider them so real that intercourse between the persons bearing them is looked upon as incest, and in most tribes punished by death to the man, if not to the woman also.

true genealogical clan ; and that the denial of relationship to its members may be clearly traced to a confusion in the use of the word *γένος* for which the grammarians are responsible.

§ 15. *The Genos a distinct Corporation.*

Here again the invaluable Necera case throws light upon our subject. Phrastor, we are told, brought for enrolment his son by Necera's daughter, not only both to the phrators and to the demotes, as already noted, but also "both to the phrators and to the Brytidæ of whom Phrastor himself was a gennete."¹ The point here is the statement that the child was brought both to the phrators and to the Brytidæ—in other words, both to the phrators and to the gennetes. If there be no real distinction² here, we have an instance of mere tautology of which we cannot suppose an Athenian orator to have been guilty. It seems to be a clear distinction between the jurisdiction of a *phratria* and that of a *genos*. The Brytidæ were not merely a house-father with his sons and grandsons: they were a number of house-fathers with their families—quite possibly even a number of groups of house-fathers belonging to many different demes, and yet held together by a valid and enduring bond, which secured to them a common right of decision as to the eligibility of children for admission among them. They were therefore a real corporate body. This body was a definite integral part of a *phratria*, distinct from and yet connected with all similar parts of the same *phratria*, each of which, like itself, had a distinguishing title of its own. Phrastor had to bring his son first to his own gennetes, and subsequently to the larger division to which his genos, in common with certain other *γένη*, belonged. The council of his genos had to be satisfied as to the qualification of the child, and their decision had to be ratified by that of his *phratria*, and finally by that of the assembled *phratries* before whom the sacrifice had to be offered for the child at the festival of Apaturia.

§ 16. *Constitution of the Genos.*

The constitution of the *genos* seems to have presented a difficulty, for we are told that it consisted of thirty *γεννῆται*, or *ἀνδρες*, rendered by Hermann "houses,"³ and it is not clear at first sight how this number could be a constant. If we could take these houses as equivalent to the Roman *familiae*, the

¹ *Necern*, 77 : *εἰς τοὺς φράτερας . . . καὶ εἰς τοὺς Βρυτίδας, ὃν καὶ αὐτὸς ἔστιν ὁ φράστωρ γεννῆτης.*

² See also Iseus, "De Apollod. Her." 3-5.

³ "Greek Antiq.," § 99.

difficulty would vanish. For, since the various households, however they might increase in number, would be ranged under one or another of the familiae, the number of these would naturally be a constant. But this would be unsafe, for there is no evidence that the familia had developed within the genos, though it is quite possible that there may have been something very much like it.

The real explanation, we venture to suggest, may be as follows :—

The thirty gennetes were probably the council of the genos, elected from among the house-fathers and restricted in number to thirty for the sake of convenience.¹

They were THE GENNETES *par excellence*; but in addition to them there might be many γεννῆται (house-fathers) who were all classed, together with the juniors, as ἀτριακάστοι. This is analogous to what we find in Australia, and (one may almost say) everywhere in savagery—a council of elders in which many members of the community have neither seat nor voice, or a seat without a voice.

§ 17. Relationship of the Gennetes.

Thus far all seems clear enough, but when we go to the grammarians for information as to γένος and γεννῆτης we plunge straightway into confusion worse confounded. We are at once confronted by the misleading definition of Julius Pollux—οἱ μετέχοντες τοῦ γένους (ἐκαλούντο) γεννῆται καὶ ὁμογάλακτες, γένει μὲν οὐ προσήκοντες, ἐκ δὲ τῆς συνόδου οὕτω προσαγορευόμενοι,² which Niebuhr thus paraphrases : “The members of a house or genos, who were called gennetes, or ὁμογάλακτες, were no way akin, but bore this name solely in consequence of their union.”³ But how was this union effected ? How did the συνόδος come about ? Harpocration, on γεννῆται, says they are οἱ ἐξ ἀρχῆς εἰς τὰ καλούμενα γένη κατανεμηθέντες. But how did they get themselves allotted to the καλούμενα γένη ? The grammarians help us in no wise by thus summarily disposing of the difficulty. One thing is absolutely certain, namely, that the far-away ancestors were not arbitrarily drafted into γένη. Ancient

¹ The council of a phratry, if each genos sent a representative to it, would consist of thirty members, and thus the number might be suggested for the lower council. Of course this is mere conjecture. But when we consider how the members of the phratries and the γένη were scattered among the demes we can but allow a strong probability that they would have local executive councils to deal with their every-day affairs.

² “Onomasticon” viii, 111.

³ “Rom. Hist.” Hare and Thirlwall’s translation, p. 311.

society—the more ancient—does not thus regulate itself. “*Nascitur, non fit.*” One can understand a Kleisthenes redistributing into demes a civilised community which has grown into a State, but the notion of any such arbitrary distribution of men into *γένη* in the beginning of things cannot be entertained for a moment. The genos must have been genealogical at that very indefinite starting-point. This we think will be readily granted ; and we may now ask, at what period in its subsequent history could it have become non-genealogical ? When could any one single individual have got into it from without ? We see it jealously guarding itself against intruders even in the latter days when the State had supplanted the kin, and most assuredly we cannot expect to find any relaxation in this jealous care as we go back towards the time when the kin was all in all. Adoption certainly introduced members from without ; but in the first place none but phrators could be adopted—that is to say, none but those who belonged to one or another of the phratriæ which made up the community, and of these one’s own phrators and the nearest of kin among them would naturally be preferred. The adopted son must be a person known to the ancestral gods. The *sacra* must not be defiled by a stranger’s hand. Therefore, if the genos were genealogical in the beginning, it follows that the gennetes of historic times were, by either birth or adoption, the direct descendants of its earliest members. In other words, they were of common descent. This conclusion brings us apparently into violent collision with Julius Pollux ; but we think it can be shown that his statement admits of a clear and satisfactory explanation, and that there is in reality no collision at all. The fact of the case is, that at the time of the grammarians, and long before their time, the word *γένος* had come to have two meanings ; and this fact, as it seems to us, affords a complete solution of the entire difficulty. Primarily the word indicated the *γένος* which was an aggregate of *γεννῆται*. In its more modern and narrower sense it also denoted a certain kind of relationship, which, according to Pollux, did not extend beyond persons of one direct line, nor beyond one generation, taking a complete generation to reach from grandfather to grandson—*οίον γόνεας, νιεῖς, ἀδελφὸνς καὶ τοὺς πρὸ τούτων καὶ ἐκ τούτων, ἐφ' ὧν καὶ ἡ γεννεὰ τάπτεται*.¹ Hence we can understand him when he says that *γεννῆται* are not *γένει προσήκοντες* ; and his definition of them may be taken as follows :—“Gennetes did indeed belong to a certain section of a phratry which was called a *γένος*, but they had not to one another that particular kind of relationship which we understand by the word *γένος*

¹ “*Onomasticon*,” iii, 6.

nowadays,¹ and by this I mean to say that they were not brothers to one another, nor own brother's sons, nor fathers and sons, nor grandfathers and grandsons." Niebuhr's "no way akin" is far too strong a phrase here. "Not connected by the very closest blood ties" would perhaps be nearer the mark, and it might be well to guard even this by adding "according to the modern notion of relationship."

For the fact that the gennetes were not reckoned to be thus related in the time of the grammarians cannot be taken as proof that they were not so reckoned even in the time of Demosthenes. Most certainly it is no proof that they were never so reckoned that they were not traditionally of common descent, and consequently that the genos was not a genealogical clan. The assertor of the negative here should be provided with proof far stronger than any the grammarians can afford, for he would be asserting that the social unit was always the individual in the Attic tribes. And this would be only another way of saying that the older history of their development is altogether different from that of other branches of the Aryan stock, and indeed from that of all other tribes which have come under our ken. From what has been ascertained concerning these, the fair inference is that in the more ancient times the gennetes were "tribal brothers,"² and that the genos then consisted of groups which bore the relationship of *γένος* to one another—group to group; in other words that *γένος* the relationship covered and coincided with *γένος* the aggregate of *γεννῆται*. As the individual asserted himself more and more strongly against the group and prevailed over it, *γένος* the relationship would become more and more contracted in its range, until at length it would be confined to individuals who were ascendants or descendants in a single line, *ἐφ' ὧν καὶ ή γεννεὰ τάττεται*.³

¹ The fact seems to have been strangely lost sight of that Julius Pollux could not have written his "Onomasticon" until near the end of the second century of our own era. His notions of relationship seem to be taken as if they were necessarily identical with those of men who lived in the days when the old genealogical basis of society in Attica was only in process of being superseded by the political. Nay, more, they are taken as if they represented the notions of relationship held by the Attic peoples long before that of the State found its way into their minds.

² This relationship being allowed the right of decision as to the eligibility of children for admission into the genos was naturally common to all the gennetes in their joint paternal capacity. We have seen that it descended intact to their modern representatives.

³ We may note the same tendency even in tribes which are supposed not to be of the Aryan stock. Thus, Fijians marrying within their own *matangals* (genos) acknowledge that this is a breach of ancient rule, the father of the contracting parties being tribal brothers by common descent. But they excuse themselves on the ground that "their fraternity is far away"—i.e., they are not *γενεὶ προσῆκοντες*. Give the Fijian a political bias, and as many centuries as

We venture to think that what we have advanced is sufficient at least to show that the refusal to accept the genos as a genealogical clan needs reconsideration. To our own minds—biased, perhaps, as they may be by our investigations of savage customs—there is no difficulty whatever in the way of accepting it as a subdivision of the phratria, consisting of various familiae—not necessarily the Roman familiae, but various lines of ascent all converging into one line, at the head of which stands the Eponym, or common ancestor. Why it should be so strongly asserted that the Attic genos differed essentially from the Roman gens, and still more that “the Roman gens is the only gens we know,”¹ we are at a loss to conceive, unless it be that the grammarians’ definition of *γένος* and *γεννῆται* have been taken as a full and authoritative settlement of the question. They were certainly thus taken by Niebuhr, for he refers to them as an “express denial of common descent,” and accepts their verdict, whereas they are no more than a denial of a particular kind of relationship.

§ 18. *Was the Genos Exogamous?*

The Australian totemic division is not only genealogical, but exogamous also. We have endeavoured to show that there is good reason for reconsidering the decision that the Attic genos was non-genealogical, and we have now to inquire whether there is any evidence that it was exogamous.

In later times most certainly it was not, nor is there any evidence within our knowledge that it was exogamous in any historic time. Morgan was unfortunately led to assert the contrary by a passage in Metcalfe’s translation of Becker’s “Charikles”: “Relationship was, with trifling exceptions, no hindrance to marriage, which could take place within all degrees of ἀγχιστεία and συγγένεια, though naturally not in the *γένος* itself.”² We have not had an opportunity of examining this passage in the German, but Dr. E. B. Tylor has been kind enough to inform us that he finds Metcalfe’s rendering to be a mis-translation. The true meaning undoubtedly is that marriage was prohibited to those only whose relationship was within the degree of *γένος* as defined by Julius Pollux. This does not prohibit marriage within the genos, nor is there any ground whatever for supposing that it was prohibited. On the contrary, judging from the usage of agricultural tribes of the present day, who have

intervened between Demosthenes and the grammarians for that bias to deflect his course, and he would come to define *γένος* as Julius Pollux defined it.

¹ “Imperial Encyclopaedia,” Art. *Gens*.

² “Charikles,” Excursus to Scene XII: The Women. Quoted by Morgan, “Antient Society,” p. 225.

descent through the father, it seems quite certain that it was not only permitted, but encouraged. We find the custom of giving a dower of land with the bride to be a powerful incentive towards such marriages. Thus in Fiji the *matanggali* (genos) always desires to keep its marriages as far as possible within its own bounds, confessedly for the purpose of keeping the dower lots within the *matanggali*.

But may we not infer from the facts as to exogamy which the researches of late years have brought to light that there was most likely a time in the earlier history of the genos when it forbade marriage within its limits? As we have already stated, the Fijians though encouraging marriage within the *matanggali*, acknowledge it to be a breach of ancient rule; and that rule is still absolute in "the present practice of the pure Indian tribes."¹ The legend of Kekrops points to the former prevalence of group-marriage among the ancient Attic tribes; and if there were group-marriage, there must have been exogamy within some tribal division or another. This, however, is but another way of saying that the utmost we can safely assert is a possibility which is very likely to represent the actual fact.

§ 19. *Mother-right in Attica.*

It is not at all necessary to our case that we should endeavour to show the former prevalence of descent through the mother among the Attic tribes, nor do we think that it can be shown. Most of the available evidence has been presented by Mr. J. F. McLennan,² with all the skill of a practised advocate; but the verdict seems to be against him. If we could take the Lycians to be undoubtedly of Hellenic blood, as he takes them, the case for mother-right would have a somewhat better appearance; but Canon Rawlinson is as strong in the negative³ here as Mr. McLennan is in the affirmative.

And even if we could take the middle course, and conclude with Dr. Smith that the Lycians were half-caste Greeks⁴ we should still be under obligation to prove that this was not an instance of the mingling of a superior race with an inferior, in which the custom of the latter prevailed over that of the former. In short, if our case required us to show that mother-right was formerly the rule in Greece the statement of Herodotus as to the Lycians

¹ See the discussion of the "Principle of Exogamy" in Dr. W. E. Hearn's luminous work, "The Aryan Household," pp. 155–162. George Robertson, Melbourne, 1878 (London: Longmans; Melbourne: G. Robertson, 1879).

² "Studies in Ancient History," pp. 235–309.

³ Rawlinson's "Herodotus," i, 173, note.

⁴ Smith's "Class. Dict." Art. *Lycia*. "It is clear that . . . the historical inhabitants were Greeks, though with a mixture of native blood."

would have to be dismissed as useless to us. And indeed it would be well if we could get the Father of History out of the witness-box without damage to our cause. For, as Dr. Hearn points out in a keen examination of Mr. McLennan's Greek evidence, he expresses his astonishment at the custom of mother-right by saying that the Lycians are the only people in the world who have it, "and if of all the nations that Herodotus knew—that is, all the Greeks and all the Mediterranean peoples—none, save the Lycians only, practised the *Mutter-recht*, what becomes of the stories of Spartan polyandry, and of the Athenian or Messenian traditions on which Mr. McLennan relies?"¹ Herodotus is in this instance like a witness who, after giving evidence favourable to the side on which he was called, suddenly blurts out something which completely proves the case for the other side, or at all events damages that of his own. Mr. McLennan did good service by pointing out the significance of the old Greek myths which suggest the former existence of the totem in Attica, and there seems to be no doubt whatever that it did exist there. But, in the first place, the mere presence of the totem is not proof absolutely positive of descent through the mother, because there are real agnatic clans which are distinguished by totems. Even among the Australians such clans are found ; nevertheless, it is important to note that they always present indications of former uterine succession ; and we think it will come to be established, as a general rule, that the totem indicates that line of descent, either in actual prevalence or of former occurrence.

But, in the second place, even if we take the evidence of the myths as conclusive in proof that the totem was present among the ancestors of the Attic tribes, this does not prove that they brought it with them from their ancient seats, or that they ever bore it as their badge. It may be true, for instance, that the totem peers out from the legend of Kekrops, half man and half serpent ; but this and the other myths may be nothing more than reminiscences of love and war between encroaching settlers and totemic aboriginal tribes. A like status of civilisation being given, the Randolphs and other good Virginian families might come in time to trace their descent from one Rolfson,² a sort of centaur whose lesser half was that of the animal represented by Pocahontas' totem ; and they might tell their children, listening wide-eyed, how the ancestral heroes of their race slew monstrous bears and wolves and other ravenous beasts, which used to tear off the hairy scalp of their victims before devouring them ; and how, even after their fathers had grown into a mighty nation,

¹ "Kinship in Early Greece" (*Victorian Review*, May, 1880).

² Sitting Bull, the Indian Chief who was so troublesome of late.

they were sore afflicted by a hybrid monster who, reversing the usual order, was a bison as to his head and bust ; but human as to the hinder end of him.¹ There is nothing satisfactory to be got out of the myths.

On the whole, the most that can be affirmed is this : Searching for mother-right in Attica, we find here and there in the historic period certain marks—such as the rule with regard to the children of aliens²—which look like traces of it, but which, for aught we know, may be traces of something else. And in the shadowy border region where the horizon melts and loses itself in the cloudland of myth, we see what may well be taken for the thing itself. But we cannot determine the exact position. Though the present usage of savage and barbaric tribes furnishes us, as it were, with a powerful glass which brings it nearer to us, the distance is still so vast that we cannot distinguish with absolute certainty between the solid peak and unsubstantial cloud, and it would be unsafe to lay down any positive landmark on our charts. Which is simply a round-about way of saying that there is nothing to be said.

§ 20. Conclusion.

In our introductory remarks we stated that “there is a very close resemblance between the social structure of the Attic tribes and that of the Australian aborigines, not only in general organisation but even in usage also,” and we now venture to submit that, to some extent at least, we have made good our statement. It is, of course, to be distinctly understood that we undertook no more than this. We undertook to show a resemblance, not an identity, and most certainly not a proof that this resemblance establishes any link of connection between the Greeks and Australians. Not even positive identity of organisation could prove as much as that.

Our object was twofold. First, to show that Athenian society was built upon an old foundation whose outlines, and even whose inner dividing lines, coincide substantially with those of savage society, and that those lines may still be distinctly traced. The stately edifice of civilisation built itself upon them, and it was their arrangement which determined its general form. And secondly, our purpose was to show in the low savagery of Australia the beginning of that conflict between the two organisations which ultimately wrought the cluster of genealogical clans into the political organisation called the State.

We are not unreasonable enough to affirm that the tendency

¹ Sitting Bull, the Indian Chief who was so troublesome of late.

² *Supra*, § 9.

of the local organisation to alter and supplant the social, as we see it in Australia, is sufficient of itself to produce the Athenian State. It takes the community out of mother-right into father-right,¹ and establishes the true agnatic clan; but at that point in many tribes its force appears to be exhausted. In any given clan the social organisation now coincides with the local—that is to say, the two organisations are now conterminous as to their parts as well as in their entirety, and an equilibrium results which may last through untold centuries. When the totemic division with descent through females is replaced by the local clan with descent through males, further development then seems to depend chiefly, if not entirely, on birth. When that point is reached, and not till then, the possibility arises of chieftainship hereditary in a direct line among a group of agnates, of a caste of nobles, and of various grades determined by birth: the high-born, the well-born, the full-born, the free-born; and on the other side of a great gulf, the men who had the misfortune not to be born at all. All these begin to come by an orderly process of evolution as soon as the clan is formed with descent through the father, and a preferential right is established in favour of the firstborn over his younger brothers.

At this point most of the early communities stopped; but in Athens appeared the force which was destined to set aside this firmly established order. And this was a conviction in the minds of men that the heaven-born caste has no inherent vested right to exclusive authority. The rise and progress of this remarkable phenomenon in ancient history has been traced by far abler hands than ours, and we mention it here only because we wish to call attention to the fact that, where this disturbing element arose in the established order, it was the truce which had lasted through ages that was broken; it was the old strife that renewed itself on the old lines. The innovating politicians saw clearly that the social organisation was the enemy's stronghold, and that it was necessary to their purpose to make the local organisation dominant over it. So they attacked it cautiously but persistently; by sap, not by storm. They did not attempt to overturn and destroy it; but they dug out from under it all the authority on which it rested, and then, and even reverentially, "eased it down" below the height on which the rulers sit.

In Attica we see a number of petty, independent, more or less mutually hostile, affiliated clans consolidated under the leadership of Athens. This seems to be undoubtedly the meaning of

¹ The process may be clearly seen still going on, but not yet complete, in tribes within our knowledge.

the story that Theseus united them in one city.¹ Not that the clans were fused, and recast in new forms, but simply that they were now held together under one head by a political bond. Here they begin to come out into the light of history, and we see plainly that thus far they are in nowise different from many similar confederations which existed unchanged through century after century. But the keen, restless Athenian intellect does not long remain content to stand in the old paths, merely because they are the old paths. It commits the impiety of thinking and choosing for itself, and of innovating; and so we see the old strife renewed and the local organisation setting itself against the social organisation once more. Gradually it usurps more and [more authority as the political bond grows stronger and stronger, until at length it grasps all real power over affairs, and leaves to its supplanted rival nothing but a registry of births, a religious festival, and a tribunal once awful and all-powerful, but now shorn of legal authority, though permitted still to look after the morals of the community and to levy fines upon *sinners*,² on condition that it does so in secret.

Nothing is more interesting than to watch the progress of the local organisation, at first unconsciously, but afterwards of set purpose, ousting the genealogical from the place of power, until at length it culminates at Athens in the deme, from which there seems to be only one step—that of enrolment consequent upon settlement—to our own “township.” And yet, the other organisation was still living and full of vigour. In our own day modern notions and institutions exist side by side with old beliefs and regulations—the one in civilisation, and the other in contemporaneous savagery—running merely in parallel lines, not touching or in any way affecting one another, so long as the superior race does not come into collision with the inferior. But at Athens we see the two interwoven with one another in the same people, and each exerting a powerful influence upon the other. What the outcome might have been if the Athenian State could have been isolated and left to work out its own problem in its own way, or if it had been strong enough to hold its own against the pressure from without, can be only a matter

¹ “Thucydides,” ii, 15.

² Among savages it is the elders who have this authority, and in their case it is real and efficient. Thus, in some of the Fijian tribes, there are certain elders who are efficiently *custodes morum*. It is their business to see that the young folks walk in the ancient ways, to warn them against transgression, and to punish them for it. For instance, one of them seeing a young fellow with his *malo* (waist-cloth) unduly elevated towards his chest—an assumption of rank to which he had no claim—cried threateningly to him, “ You there ! What are you doing with the strangling-cord of your father high up like that ? ” And the club was raised to enforce the reproof.

for conjecture. It was open to attack, and not Athene herself, spear, ægis, and all, could stand against the forces which beset her.

"Liberty said, 'Let there be light,' and like a sunrise on the sea Athens arose."

But Liberty uttered her fiat too soon. The age was not ready for it; and so, as Walter Bagehot says, "Athens was the great free failure of the ancient world."¹ The age of Discussion had begun before people were willing to hear it, and a stiffnecked and perverse generation put it down."

DISCUSSION.

Mr. HYDE CLARKE, while regretting the absence of Dr. Tylor, pointed out that the paper before the Institute was an example of the service which anthropological science could render in the illustration of classical history. In fact, it was the substitution of men practically acquainted with human nature and the institutions of man, for recluses who applied their own imaginations to the texts of the writers of Greece and Rome, and only confused what was of itself obscure. It was legitimate to examine the institutions of Attica by the light of those of Australia; but it was questionable whether the institutions of the one could be regarded as those of Aryans, or of the others as those of savages. The earliest known inhabitants of Attica were certainly not Hellenes or Aryans, but Turanians; and the point with regard to Australia was whether the institutions were invented by the black savages or introduced by a higher race. He had given evidence as to former intercourse with Australia, and in that continent there was a growing disposition to attribute the institutions to an extinct race. From one origin were derived the institutions of antiquity throughout the world. Personally he regarded the paper with great satisfaction, as a contribution in support of his own researches. It would be seen by reference to his paper on Autonomous Coins, in the "Transactions of the Royal Historical Society," that he had shown the population of the Mediterranean countries and islands to be Turanian. Each settlement consisted of members of several populations and tribes, and this he suggested was in reference to the institution of exogamy. This was consequently the condition of Attica, and he should therefore regard with some hesitation the conclusion that the local organisation was to be regarded as so much later than the phratry in the organisation of these states. Whether an island or a petty kingdom there was a local organisation from the beginning of the settlement, and within which was to be found the phratry to the number of four, five, or six apparently. This condition was represented in a paper of Mr. Man as to the traditions of the Andamanese. Therein it was distinctly stated that for the origin of

¹ "Physics and Politics," p. 28.

the population tribes were created with separate languages. Such appeared to be the condition of the populations in the countries around the Mediterranean, and it was to be presumed in other regions.

The following paper was then read by the Assistant-Secretary:—

On AFRICAN SYMBOLIC MESSAGES.

By the Rev. C. A. GOLLMER.

AFRICAN symbolic language consists of messages which the natives in the Yoruba country, West Africa, in the absence of writing, and as a substitute for the same, send to one another in order to indicate and communicate their mind. This is effected by means of a variety of tangible objects, such as shells, feathers, pepper, corn, stone, coal, sticks, powder, shot, razor, &c., by which they convey their ideas, feelings, and wishes, good and bad, and that in an unmistakable, and if possible more forcible manner than can be done by writing, as the object transmitted is seen, the import of it known, and the message verbally delivered by the messenger sent, and repeated by one or more other persons accompanying the messenger for the purpose as the importance of the message is considered to require.

The shells made use of for this purpose are chiefly the cowries, with a few others. No cowries are found on the West Coast of Africa; they are all imported by European merchants. The white cowries come from the Molucca Islands and others in the Pacific Ocean, and the grey-looking ones from the Island of Zanzibar, and other parts of East Africa. Cowries have long been and still are in use in West Africa, as in parts of India, &c., as the current money of the country, and the people make also much use of them in their idolatrous worship. Cowries in the symbolic language are used to convey, by their number and the way in which they are strung, a great variety of ideas, as will be seen by the following, viz.:—

1. *One cowry* may indicate “defiance and failure”; thus: A cowry (having a small hole made at the back part, so as to be able to pass through it, and the front opening) strung on a short bit of grass fibre or cord, and sent to a person known as a rival, or one aiming at injuring the other, the message is: “As one finger cannot take up a cowry (more than one are required), so you one I defy; you will not be able to hurt me, your evil intentions will come to nothing.”

2. *Two cowries* may indicate "relationship and meeting"; thus: Two cowries strung together face to face, and sent to an absent brother or sister, the message is: "We are children of one mother, were nursed by the same breasts; we are one, what you hear from me is the truth: you look at me, and I look at you, but I want to see you yourself, and that face to face; come."

3. *Two cowries* may indicate "separation and enmity"; thus: Two cowries strung back to back, and sent to a person gone away, the message is: "You and I are now separated. Let us keep what we promised; if you do not our friendship is dissolved; you turn away from me, seeking your own; I must turn away from you, and do not want you to come back to me."

4. *Two cowries* and a *feather* may indicate "speedy meeting"; thus: Two cowries strung face to face, with a small feather (of a chicken or other bird) tied between the two cowries, and sent to a friend at a distance, the message is: "I want to see you; do not delay in coming, but as the bird (represented by the feather) flies straight and quickly, so come as quickly as you can, that I may see you face to face."

5. *Two cowries* with a little *soap* and *camwood* may indicate "help and faithfulness"; thus: Two cowries strung face to face, with a small piece of native soap and camwood (a red dye) tied between the two cowries, and sent to a member of the family from home, the message is: "We are alike; you and I have been washed, and made clean with this soap; you and I have had our bodies rubbed over with this camwood (powdered and mixed with oil); having thus alike been helped, and faithfully attended to for good, let us be true, help and do all we can for the good of one another—you absent, and I at home."

6. *Three cowries* strung together, with their faces towards the long end of the string, are made use of by the *Ogbonis* in sending messages to one another.

Ogbonis are members of a secret society, men and women, chiefly of the older and better class of the people, whose professed object is, "the good of the people and the country."

The *number* (three cowries) indicates that the message comes from a society or company, and the manner or way in which the three cowries are strung indicates that they all look to the same thing—*i.e.*, are of one mind. But the message communicated therewith (*i.e.*, delivered by the messenger) can only be heard and understood by those initiated into the secrets of the society. As the native proverb indicates, viz.: "*Ogboni meji li o mò idi Eta*"—*i.e.*, "Two *Ogbonis* (members of the society) know the meaning and matter of the three."

7. *Three cowries* with some *pepper* may indicate "deceit";

thus: Three cowries strung with their faces all looking one way (as mentioned before), with an alligator pepper tied to the cowries, *Eru* being the name of the pepper in the native language, which in English means "deceit." The message may be either a "caution not to betray one another," or, and more frequently, "an accusation of having deceived and defrauded the company."

8. *Five cowries* may indicate "sickness and pain"; thus: *Arun* in the Yoruba language means "five" (cowries or coins implied); it means also "sickness," from the verb *run*, to be sick, in pain, &c. Five cowries, strung with their faces all looking the same way, and sent to some one, the message is: "We are in the same way, viz., sick or suffering," or "We are alike pained and grieved by what we hear about you."

9. *Six cowries* may indicate "attachment and affection"; thus: *Efa* in the native language means "six" (cowries implied); it also means "drawn," from the verb *fa*, to draw. *Mora* is always implied as connected with *Efa*: this means "stick to you," from the verb *mo*, to stick to, and the noun *ara*, body—i.e., you. Six cowries strung (as before mentioned) and sent to a person or persons, the message is: "I am drawn (i.e., attached) to you, I love you," which may be the message a young man sends to a young woman with a desire to form an engagement.

10. *Seven cowries* may indicate "ending or stopping"; thus: *Eje* in the native language means "seven" (cowries, and here days implied). By custom the worship, &c., of the executive god *Oro* may last seven days, and then it must end. Seven cowries, strung as before stated, sent to any one acquainted with, the message is: "There must be an end to our intercourse and friendship, &c., and all messages, &c., must be stopped now."

11. *Eight cowries* may indicate "likeness and agreement"; thus: *Ejo* in the Yoruba language means "eight," also "alike," "conform," "agree," from the verb *jo*, to be alike, to agree, &c. Eight cowries strung (as before mentioned—i.e., all faces looking one way) and sent to some one, the message is: "We are like you, and agree with you respecting the matter," which is applicable of course to a variety of things, and may be so to one thing in particular, viz., as a message of a young woman in answer to the message received from the young man, as per the six cowries communication.

12. *Nine cowries* may indicate "benefit or revenge"; thus: *Esan* in the native language means "nine" (cowries implied); it means also "to be better," and "to retaliate," from the verb *san*, to benefit, to reward. Nine cowries strung as usual, and sent to a friend or foe, the message to the former will be: "We hope you are in better health," and to the latter: "We shall pay you with the same coin," i.e., retaliate.

13. *Forty cowries* may indicate "disturbance, trouble, and loss"; thus: *Ogoji* in Yoruba means "forty"—literally twice twenty—from *Ogun*, twenty; and *Eji*, two. But it means also a "fray," i.e., "double fight," from *ogun*, war, and *Eji*, two. Forty cowries (having a small hole made at the back—not the middle part of the cowry as usual, but near the pointed part) strung, so to say, upside down, and fastened to grass fibres, the end of which bending down through the weight of the cowry, and thus sent to a friend at a distance, the message is: "We have great excitement here; the place is, as it were, turned upside down, we are in great trouble; all people hang their heads down through rumours and fears of war."

The following fourfold message (14 to 17) was sent to me about thirty years ago by the King of the *Ijesu* (*Ijesha*) country, five days' journey from Lagos interiorwards, and in a north-easterly direction.

14. *Ten cowries* may indicate "invitation." Ten cowries strung on a short and narrow strip of leather, the faces of the cowries all looking one way. *Ewa* in Yoruba means "ten" (cowries implied); *Ewa* means also "you come," from *e* the prefix being (the contracted form of) the plural of the second personal pronoun—i.e., "you" (in which form or language the higher classes of the people address, or speak to, one another as servants also speak to their masters to show respect, while the masters speak to their servants, &c., in the second person singular form—i.e., "thou," and not "you," to indicate inferiority), and from *wa*, the verb, or, better, verbal noun, "come." The message was in the polite language, "You come," which was delivered by the messengers thus: "Our king has heard of the *Alapako*, and he wishes you to come and see him, and bring white men with you to live with him."

The name *Alapako* was given me by the natives; it means "owner of the board or timber house," from the fact that in 1845 I brought timber and boards for two houses from Sierra Leone to Badagry, where I had them erected. One of them I subsequently took down, removed, and re-erected at Lagos—i.e., the present Church Missionary House at Oko Faji, Lagos, near the Government House.

15. A *fan* may indicate "high station and authority"; thus: The king's messengers carried and handed to me, whilst delivering their messages, a good-sized fan, cut out of a dried cowhide, of a round shape, and about 16 inches in diameter, with a handle attached, and ornamented with a number of figures, imitations of animals, and others worked on it in narrow strips of coloured leather, and the message was: "A great man, the owner of the fan, and sender of the message, inviting a great man to come to him."

16. A *bean* may indicate "friendship and play"; thus: The king's messengers handed me also two light grey-looking African beans, of the common marble size and form, and the message was: "When the great man Alapako visits the great man the King of Ijesa, they will sit down as friends and play together;" somewhat as friends at home sit down and play at chess or draughts, &c., with this difference, that the Africans have a thick piece of board about 2 feet long and 6 to 9 inches broad, with two rows of about half-a-dozen holes or cavities scooped out. The players sit opposite to each other with the board between them, one after the other playing, *i.e.*, moving a number of the beans from one cavity to the other along his side.

17. A *sheep* may indicate "provision"; thus: The king's messengers also brought and delivered to me two sheep. And the message was: "When the great man Alapako goes to visit the great man the King of Ijesa, he must take the two sheep and have soup made for him by the way."

The following fivefold painful symbolic message was sent by D., whilst in captivity at Dahomey, to his dear wife M., who happened to be staying with us at Badagry at the time. The symbols were a stone, a coal, a pepper, corn, and a rag. In great distress of mind M. came and showed us the articles, and told us the message received. During the attack of the King of Dahomey, with his great army of Amazons and other soldiers, upon Abeokuta in March, 1852, D., one of the native Christians and defenders of his town, home, and family, was taken captive and carried to Dahomey, where he suffered much for a long time. M., anxious to do all she could to get her husband released, came down to Badagry, and earnestly begged me to help her in her efforts. And whilst waiting for weeks to know the result, she received the symbolic letter which conveyed the following message:—

18. The *stone* indicated "health" (the stone was a small common one from the street); thus the message was: "As the stone is hard, so my body is hardy, strong—*i.e.*, well."

19. The *coal* indicated "gloom" (the coal was a small piece of charcoal); thus the message was: "As the coal is black, so are my prospects dark and gloomy."

20. The *pepper* indicate "heat" (the pepper was of the hot cayenne sort); thus the message was: "As the pepper is hot, so is my mind heated, burning on account of the gloomy prospect—*i.e.*, not knowing what day I may be sold or killed."

21. The *corn* indicated "leanness" (the corn was a few parched grains of maize or Indian corn); thus the message was: "As the corn is dried up by parching, so my body is dried up or become lean through the heat of my affliction and suffering."

22. The *rag* indicated “worn out”; thus (the rag was a small piece of worn and torn native cloth, in which the articles were wrapped) the message was: “As the rag is, so is my cloth cover—*i.e.*, native dress—worn and torn to a rag.”

Natives having frequently more names than one, and at Dahomey D. being only known by his other name, O., the efforts to redeem and release him failed. After much suffering D. was sold and shipped as a slave, but through the kind efforts of the Committee of the Church Missionary Society, and the powerful influence of the British Government, D. was found at Havanah, set free, and restored to his country and family.

The following is a twentyfold symbolic representation and communication:—

During my visit to Ketu, a large fortified town near the Dahoman frontier, and about three days' journey west from Abeokuta, in August 1859, it happened one day, when paying the king another friendly private visit, that I observed the king's previously smiling and cheerful countenance changed for the worse, and that, instead of asking me to sit by him at his usual place of reception, he led me through several rooms and courtyards to a small secret out-of-the-way place, where he asked me to sit down, and without greeting me as before with the usual salutations, and making the various customary inquiries; but, looking at me in a somewhat unfriendly manner, and after a pause, he (the king) produced and placed on the ground before me twenty little sticks of different wood, each about 8 inches long, and of the thickness of a finger, and asked me to take one of these twenty sticks.

The change in my reception by the king, which before was most friendly and now quite the contrary, with the strange place of audience, made me feel somewhat uncomfortable, and the placing of the twenty sticks before me not a little embarrassed and troubled my mind, this affair being beyond my eighteen years' African experience. I was puzzled, paused and thought what it could all mean. The more I reflected the more reluctant I felt to do as I was asked, *viz.*, to take one of the twenty sticks.

The king was silent, and so was I; but he watched me all the while, and after another long pause, during which the king's countenance changed a little for the better, he broke the silence by saying, “I see you are perplexed, and do not take one of the sticks. Well, to explain the matter (the king continued)—

23. “These *twenty sticks* represent the twenty of my young wives, who visited you this morning at your lodgings. On their return home I was informed that you eyed one of them very much, and who was supposed to have done some mischief which

you by means of your supernatural power as a priest or god could discern in her, and therefore looked at her so much, but you would not say anything on account of the many people present; so the twenty women have each brought their representative stick for you to prove and make known the guilty and clear the innocent."

I listened anxiously to this statement, and felt not a little uneasy when the king seriously spoke of my having "eyed" one of his wives, fearing "an enemy has done this," and remembering that such charges frequently result in great trouble. And yet after hearing the king out, and looking at him, I involuntarily smiled, which broke the spell of the king's gloomy countenance, and provoked a smile from him in return.

I now frankly and fearlessly stated what took place in the morning, when his twenty wives paid me a visit of honour on behalf of the king their lord, viz.: that nothing was said, either by his wives or by me, beyond the usual ceremonial salutations and inquiries, that as a minister of God it was my duty and practice to read a portion of God's Word to my visitors, and that accordingly I read these words to them (reading the 128th Psalm), and told them these are the words of the true God. I then assured him that it was not true that I "eyed" one woman more than the other, and that neither I nor any other mortal man had such supernatural powers; that God alone knows the heart of man, and the evil thereof. This statement the king accepted as true, gathered the twenty sticks and smilingly said, "My wives will be glad to hear what you stated."

I thanked God for helping me out of my dilemma, for it was clear if I had been wanting in reflection, and hasty in taking up one of the twenty sticks, the poor innocent woman represented thereby would have been seized and punished severely, and I should have been guilty of causing much injury and suffering to an innocent person.

To elucidate one of the above statements, I should mention that I was informed the Mohammedan priests assume, and make their credulous heathen neighbours believe, that they have supernatural power by means of which they can tell what bad deeds are done; and the people, taking for granted that I as a white man, and priest of God, must have this supernatural power in a higher degree than the Mohammedans, thus came to the conclusion as above stated.

24. A *tooth-brush* may indicate "remembrance"; thus: It is a well-known fact that the Africans in general can boast of a finer and whiter set of teeth than most other nations. And those Europeans who lived long among them know from constant observation how much attention they pay to their

teeth, not only every morning, but often during the day. The tooth-brush made use of is simply a short piece of wood (a medicinal root, &c.), and about 6 to 9 inches long, and of the thickness of a finger. One end of the stick, wetted with the saliva, is rubbed to and fro against the teeth, a longer or shorter period as time and work may allow, which end after awhile becomes soft. This sort of tooth-brush forms an article of trade or commerce, is also frequently given to friends as an acceptable present, and now and then it is made use of as a symbolic letter, and in such a case the message is: "As I remember my teeth the first thing in the morning, and often during the day, so I remember and think of you as soon as I get up, and often afterwards."

25. A *kola* (or *gora*) *nut* may indicate "health and old age"; thus: *Orogbo* is the name for the bitter kola or gora nut, from *koro*, to be bitter; and *gbo*, to ripen, and this kola or gora nut contains tonic properties of the nature of quinine, and is eaten to promote health. When such a nut is sent to a friend, the message may be twofold, viz.: if sent to some one who is or has been ill, it conveys an inquiry after the health and a wish of good health; if sent to one in health it conveys the good wishes to come to maturity—*i.e.*, long life, grow old—which is one of the best wishes in the Yoruba country, because of the great honour old people are held in by the people generally.

Kola nuts (divided in quarters) and water are generally offered to respectable visitors, natives and Europeans, whereby the person visited wishes welcome, peace, and health.

26. *Honey* may indicate "welcome"; thus: On one occasion, when wishing to visit a distant town and people, as a matter of precaution, not to get into any trouble in a new and unknown country on the one hand, and on the other to ascertain whether a visit was practicable, and that I might hope to be well received, I despatched messengers to the local authorities—*i.e.*, the king and principal chiefs—to inform them of my desire, and to be informed of their wishes. My men on their return were accompanied by messengers from the king, who brought not only the usual "message-stick," *i.e.*, object to identify the sender and verify the message (which may be a sceptre, sword, knife, staff, &c., according to the rank of the sender), but also two bottles of honey, which they handed to me with the message (answer): "That the king and chiefs will be glad to see me," or "As the honey was sweet, so will be my visit to them."

27. *Sugar* may indicate "peace and love"; thus: During the long and destructive war between the chiefs and people of the two large towns A. and I., in the interior, there were among the inhabitants of the two towns a number of people—native

Christians—who, instead of hating and fighting one another, were at peace with and loved each other. And in the midst of the strife this good disposition was made known to one another by the following symbol:—A loaf of white sugar was sent by messengers from the native Church at A. to the native Church at I., and the message was: “As the sugar is white, so there is no blackness (*i.e.*, enmity) in our hearts towards you; our hearts are white (*i.e.*, pure and free from it). And as the sugar is sweet, so there is no bitterness among us against you; we are sweet (*i.e.*, at peace with you), and love you.”

28. A *fagot* may indicate “fire and destruction”; thus, one mode of revenge in some parts of Africa is to set fire to an offender’s house. Robbers may also avail themselves of this means to facilitate their nightly depredations and plunder, and sometimes the innocent are punished and made to suffer in this way by evil-disposed people. During the time of sad commotion, war and rumours of war, at Badagry (connected with the slave trade), a most trying time for me and my family, as for weeks—yea, months—we had cause to apprehend an attack would be made upon us, as was intimated one night by the following symbolic object, viz.: A fagot, *i.e.*, a small bundle of bamboo poles, burnt on one end, was found fastened to the bamboo fence enclosing our compound, or premises, and which conveyed the message: “Your house will be burnt down”—*i.e.*, destroyed.

29. *Powder and shot* may indicate “murder” or “war”; thus: Disputes and quarrels are, alas! by far too common among the Africans, especially among the higher and ruling classes, and frequently jealousy and obstinacy lead to threatening messages being sent intimating that revenge will be taken when this assumes a family, tribal, or national character. Powder and shot are often made use of and sent as a symbolic letter; the message is to either an individual or a people, viz.: “As we cannot settle the quarrel, we must fight it out” (*i.e.*, “We shall shoot you, or make war upon you”).

30. A *razor* may indicate “murder”; thus: In Africa, alas! many people die an unnatural death. The Yorubas have only too good a knowledge of the poisons (vegetable, animal, &c.) that abound in their country, and only too often they make use of one sort or other to shorten the life of one another, and this takes place mostly among chiefs, the ruling powers and higher classes of the people. Other means also are employed to take revenge, and put an enemy out of the way (*i.e.*, kill him), and that in as secret a manner as possible. A person suspected and accused of having by some means or other been the cause of death of a member of a family, the representative of that family will demand satisfaction by sending the symbolic object, viz.,

a razor or knife, which is laid outside the door of the house of the accused offender and guilty party, and the message is well understood to be : " You have killed or caused the death of N.; you must kill yourself to avenge his death."

31. A certain *sound* or *noise* may indicate "the presence, voice, and speech of a god;" thus: *Oro* is the name of the executive god of the Yorubas. And as *Ifa*, the consultive god, is not represented as other gods, by an image in human form, but by sixteen sacred three- and four-eyed palm-nut stones, so is *Oro* the consultive god represented otherwise than by an image, viz., by certain implements, consisting of sticks and poles from 6 to 12 feet long, with a piece of good strong cord from 4 to 6 feet long, fastened to the thin end of the sticks and poles, and with a thin piece of board from 2 to 4 inches broad and 2 to 4 feet long fastened to the other end of the cord. The larger of these implements are put together and used by men, and the smaller by boys; and the poles and sticks are so moved about as to cause the piece of board to swing in the air, by which, according to size, either a deep sonorous or sharp shrill sound is produced, somewhat like *wu-wu-wu*, longer or shorter according to the slow or quick moving of the implements. These sounds are heard generally after dark and for hours, seldom the whole night; and at times, when a number of these different implements are in use at a given spot, the sound is most melancholy and dismal, intimidating not only native but even European females. These sounds are sometimes heard in the daytime, but only at a distance from a sacred grove or a neighbouring forest, so that the women cannot see the implements nor know how the sound is produced, lest the secret of the men in this matter should be divulged and spoiled. For the men impose upon the female sex, making them believe that these sounds are the voice of *Oro*, the executive god—*i.e.*, "the voice of the departed spirits of their ancestors" (the deep or low sound being the voice of the old, and the shrill that of the young ones), "and that they are come for the purpose of holding a council and to judge matters." The nature and doings of this god are understood to be a secret known to the male sex only; but no doubt a number of women know a good deal about it, though they dare not and do not talk about it, from fear of *Oro* punishing them.

The control of this god *Oro*, or the sayings and doings in his name, is chiefly in the hands of the *Ogbonis*—*i.e.*, the elder members of the secret society mentioned under paragraph 6, for they appoint the time when, and determine for how many days (one, two, or up to seven), *Oro* is to make his appearance in public. And they order the town criers to give public notice

previously of the day fixed, so that the women may have time to provide and store up in the house the needful food, water, firewood, &c., for so many days, so that the objects of *Oro*, or rather the designing men, may not be interfered with, which are: to deprive the women of their privilege of attending the public meetings proposed to be held by the men; to compel all women, old and young, high and low, to remain indoors, and on pain of death not to appear in the streets; and also that the men may be able quietly to hold their meetings, discuss plans, and decide upon important matters, which may be the execution of criminals, planning a war expedition, or offering a human sacrifice, &c., unknown to the women, who might otherwise frustrate their purpose.

32. *Fire* may indicate "punishment"; thus: *Sango* (Shango) is the name of the god of thunder and lightning of the Yorubas. Thunder and lightning in Yoruba are most awfully grand, the peals of thunder being often terrifically loud and powerful, shaking the very ground under one; and the flashes of lightning are not only exceedingly vivid, but great masses of fire, and often destructive, people being killed and houses set on fire by it, and from fear thousands of poor ignorant heathen people worship this terrible and destructive god, that he may not punish them. When there is a storm thousands of the worshippers perambulate the streets, shout mightily with every peal of thunder and flash of lightning. And when a thatch roof of a house or compound is set on fire, many assemble there and sing and dance around the burning place, making no attempt, nor permitting any one to attempt to put the fire out, shouting, "It is holy fire, the fire of Sango." They say: "Sango punishes the owner for some offence, by burning down his house." "Sango is punishing him also by giving all his property to his worshippers." Accordingly they plunder the premises, and rob the poor man and his family of all they possess. And as a further punishment the head of the family has to pay a fine in money, i.e., cowries, to the worshippers before he is allow to rebuild his house.

33. A *leopard* may indicate a "human enemy"; thus: In the early part of my residence at Lagos, just thirty years ago, a leopard swam across from the mainland to the island of Lagos, and the Church Missionary House being at that time the first or last house of the town, i.e., in coming from or going to the sea, we had the first visit from the leopard, the forest monster. Unannounced he leaped over our compound wall, but not finding what he was in search of—i.e., a lamb, sheep, or bullock—he as unceremoniously left, leaped over the wall again, and proceeded into the town, where, in an open place, he met two men, who

kept watch because of human enemies being feared to come and attack the town. The leopard sprang upon one of the men, dug the claws of one of his fore feet into the man's shoulder, and the other on his forehead, the man embracing the body of the leopard tightly; whilst in this position the other man shot and killed the leopard. The following morning the men brought the dead leopard, a fine large animal, to me for inspection, &c., the head of the leopard being covered up that the women might not see it, because it was said and believed the leopard was one of their great human enemies metamorphosed.

34. A *necklace* may indicate "slavery"; thus: Some slaves have to wear a certain necklace—*i.e.*, a string with a few beads fastened round their neck, which indicates that they are in bondage—*i.e.*, slaves. When such a person by any means is redeemed, the best and only proof of being no longer a slave, but a free person, is the taking off of the said necklace.

35. A *book* may indicate a "bookman"—a missionary; thus: Native kings, chiefs, warriors, &c., hand their messengers an object which may be a sort of sceptre, sword, staff, &c., to show that they are sent with authority to deliver a message. European officers, merchants, and others, in imitation of this native custom, generally give the messengers they send to native authorities a fine large silver-headed staff, and for the same purpose, as without it chiefs would hardly credit the message sent. We missionaries, not being provided with such a staff, gave our messengers a book instead, by which they were known to come from the bookman—*i.e.*, the missionary, and the messenger had also liberty and the advantage, after delivering his message, to read a portion from his Yoruba book.

36. A *shirt* may indicate an *Oyibo*—*i.e.*, a "white man," or "belonging to the white man." Shirts are of course worn by all Europeans or white men, also by most natives employed by them. White men are much respected in West Africa, and the natives connected with them come in for a share of the respect. Natives entirely unknown to, and unconnected with whitemen, when travelling up and down in the interior, and unsafe places specially, frequently resort to the stratagem of providing and wearing an English (European) shirt, which they find to be the best possible passport and protection, by means of which they are allowed to pass unmolested, because the shirt indicates the wearer to belong, or to be connected with, or employed by the white man; and robbers, waylaying travellers, regard such a one as an unlawful subject of plunder, and do not trouble him, as they believe he belongs to the white man.

37. Symbolic salutations are constantly received from—

(1) Blacksmiths, who will salute passing chiefs, friends, and

others whom they respect, by striking their anvil with a piece of iron in a peculiar but well-understood manner.

(2) Weavers (who generally sit and weave out of doors) salute the same class of people as mentioned before, by moving their shuttle to and fro, and thus produce a peculiar rattling noise, which is also understood as a complimentary salutation.

(3) The drummer going about the streets will salute authorities and such as they desire to honour, by beating their drums and producing certain well-understood speaking sounds.

(4) The musician will do the same—*i.e.*, blowing his horn or fife, and make them speak instead of the mouth.

I am aware there are other objects by which symbolic messages are conveyed among the Yorubas, but I can add no more to the present communication.

DISCUSSION.

MR. HYDE CLARKE said this paper had been communicated by Mr. R. N. Cust in the hope that it might induce other missionaries in Africa to supplement the information. Symbolic language was practised in many parts of the world, and notably in Southern and Eastern countries, and depended on a full knowledge by the people of the symbols. In Italy and other countries it worked in combination with the systematic dream-books, which, by the bye, had not received notice, though they were connected with widespread superstitions. A familiar illustration of symbolic language was the Turkish love letter recorded by Lady M. Wortley Montague. The symbolic language of the Yoruba people, called also *A-ku*, was of considerable interest, and the language had been much studied by French scholars from its apparent relationship to languages of the ancient world. It would be observed that the number of cowries used were also applied by their sounds expressing other meanings. This was an illustration of ancient symbolism; ideographs and characters, for framing the names of the numerals, were not exclusively numeral, but were also the names of other objects: such relations of numerals lay at the base of astrology. Another feature of the paper was its indication of separate symbols used by the secret societies, as to which they wanted more information. This fragment offered the suggestion, in combination with other facts, that the secret societies of Africa were of the same origin and same organisation as the mysteries—what we commonly understand as masonic societies. Throughout the world they were commonly found to be framed on a similar model, in the ancient mysteries of Africa, in India, among dervishes, among the Greeks, and among Freemasons and their imitators, though in reality there is not the connection between them which is commonly supposed. If the author be right, women among the Yorubas are admitted to some of the mysteries, as was the case

among the ancient Greeks; but the general rule is their exclusion and a restriction to men. A matter cursorily referred to, and on which more information was required, was the drum language, on which he (Mr. Clarke) had made a communication to the British Association. Another deserving of inquiry was the salute given by craftsmen.

JUNE 24TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., President, in the Chair.

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

- From Professor FLOWER.—Catalogue and Handbook of the Archæological Collections, Indian Museum. 2 vols. By John Anderson, M.D.
- From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. VIII, No. 6, April 1884.
- From the SOCIETY.—Proceedings of the Asiatic Society of Bengal. February, 1884. No. 2.
- Journal of the Asiatic Society of Bengal. Vol. LIII, Part I, No. 1, 1884.
- Proceeding of the Society of Antiquaries of London. Vol. IX, No. 3.
- From the EDITOR.—“Nature.” No. 763.
- Revue Politique et Littéraire. Tom. XXXIII, No. 24.
- Revue Scientifique. Tom. XXXIII, No. 24.
- “Science.” Nos. 69, 70.

The election of A. W. HOWITT Esq., F.G.S., and the Rev. LORIMER FISON, M.A., as corresponding members, was announced.

MR. J. E. GREENHILL exhibited a large and interesting collection of palaeolithic flint implements recently found by him in the north-east of London; and gave a verbal description of the collection.

The DIRECTOR read a paper “On Phœnician Intercourse with Polynesia,” by Dr. S. M. CURL, upon which Mr. J. PARK HARRISON made some observations.

The PRESIDENT read the following paper :—

On the SIZE of the TEETH as a CHARACTER of RACE.

By WILLIAM HENRY FLOWER, LL.D., F.R.S., P.Z.S.,
Pres. Anthrop. Inst., Director of the Natural History Departments of the British Museum.

IT has long been known that the teeth of certain races, notably those of the Australians, are of superior size, both actually and in proportion to the general stature of the individual, than are those of other races. It is, however, very desirable that some more exact information on this subject should be obtained, and if possible more numerical relations established, by which the amount of variation in the size of these organs in different races may be formulated and compared.

For this purpose I have availed myself of the very large and varied series of skulls, now contained in the Museum of the Royal College of Surgeons, including those of the Barnard Davis collection, and having measured the greater number of them, beg to submit the results to the Anthropological Institute. Even in so large a collection, numbering over 3,000 specimens, those which can be made use of for this purpose are less numerous than might be supposed at first, in consequence of the numbers,—in fact, the great majority being defective in their teeth, either from decay or loss during life, or from their having fallen from the skull after death. Complete sets are extremely rare. The incisors and canines, owing to their simple mode of implantation, are most frequently lost; but the molar series, if complete and sound at the time of death, are in a great many cases preserved. Sufficient numbers for deducing any general observations could, in fact, only be obtained from the latter, and those of the upper jaws alone have been used, because they are more numerous, so many skulls wanting the mandible, and because there is no need to measure both, as the general size of the one is necessarily related to, and coincides with, that of the other set. I have therefore taken as a test of the size of the teeth the length in a straight line (as measured by the sliding compasses) of the crowns of the five teeth of the upper molar series *in situ* between the anterior surface of the first premolar and the posterior surface of the third molar, which length is designated hereafter as the *dental length* (*d*).

The absolute length is, however, hardly sufficient for our purpose in comparing races; for the size of the individual, and of the cranium generally, should be taken into account, as smaller races and individuals might naturally be supposed to have smaller teeth. It is therefore necessary to find some standard

of length as indicating the general size of the cranium, with which to compare the dental length. For this purpose I have selected the cranio-facial axis, or basio-nasal length (BN), the distance between the nasion (naso-frontal suture) and basion (middle of anterior edge of foramen magnum), as being on the whole the most constant and convenient indication of general size. Even in this measurement there is, unfortunately, an element of variability introduced, independent of the actual size of the skull, by the inclusion of the roof of the nasal chamber, and the thickness of the lower border of the frontal bone; but putting aside occasional individual variations, this is one of the most constant dimensions of the cranium, and if not safe to apply to a single skull, will, if the averages of a sufficient number of specimens are taken, afford a good standard of comparison. In the average male skull the length is very nearly 100 millimetres, in the female skull 95. Between the basio-nasal length and the dental length an index can be established on the formula $\frac{d \times 100}{BN} = \text{the dental index.}$

The average dental indices of the various races measured appear to vary between 40 and 48, although individuals may be found which either fall below or exceed these numbers. The general average may be taken at 43. Following the convenient method of division adopted with other indices, the dental indices may be divided into three series, called respectively

Microdont .. below 42.

Mesodont .. between 42 and 44.

Megadont .. above 44.

I may begin, for the sake of comparison, with a study of this character in the Anthropoid apes, the results of which are shown in the following table. It will be observed the dental index is, in all cases, greater in the female than in the male, in consequence of the molar teeth of the former sex more nearly retaining their characteristic size, while the general size of the cranium, as indicated by the basio-nasal length, is diminished. This is very marked in the gorilla, in which animal the disparity between the sizes of the sexes is very great, while, in the chimpanzee, the male and female of which scarcely differ, the dental index is also almost alike.

A similar relation of the dental index of the two sexes in the human species is also seen, especially in those races where the disparity of size between the men and women is greatest.

			BN.	d.	Index.	Average index of both sexes.
Male gorilla, average of 3			124·0	63·0	50·8	54·1
Female gorilla, average of 3			108·7	63·3	57·3	
Male chimpanzee, average of 3			96·7	46·0	47·6	47·9
Female chimpanzee, average of 3			88·3	42·7	48·1	
Male orang, average of 4			109·2	58·0	53·1	55·2
Female orang, average of 2			90·0	51·5	57·2	
Male siamang, 1			79·0	33·0	41·7	

The first three species are therefore strongly megadont, while in the siamang the molar teeth are scarcely larger in proportion to the skull than in the higher races of men.

In twenty male British skulls, of which the teeth are sufficiently perfect to allow of measurement, the average BN is exactly 100 millimetres, and the average dental length is 41 millimetres, giving an index of 41; the maximum dental length being 45, the minimum 35, the maximum index 45·2, and the minimum 35·8.

In thirteen female British skulls, the average BN length is 95, the average dental length 39·5, giving an average index of 41·6. The maximum length is 43, the minimum 35. The maximum index is 44·9, the minimum 36. The remaining results of the measurements, which it may be hoped will be extended and corrected by other observers having still more ample material at command, are as follows. It will be observed that the three groups into which the races may be separated by the size of their teeth have a general correspondence with the three principal modifications of the human species: the Microdont section, containing all the so-called Caucasian or white races; the Mesodont, the Mongolian or yellow races; and the Megadont section, being composed exclusively of the black races, including the Australians.

	Sex.	Number of observations.	Average BN.	Average d.	Average Index.	Average Index of both sexes.
<i>Microdont Races.</i>						
British ♂		20	100·0	41·0	41·0	41·3
" ♀		13	95·0	39·5	41·6	
Mixed Europeans (not British) { ♂		52	101·3	41·0	40·5	41·1
Ancient Egyptians ♂		14	95·1	39·6	41·6	
" " ♂		7	101·4	41·4	40·8	
" " ♀		8	95·9	39·5	41·2	41·0

	Sex.	Number of obser- vations.	Average B.N.	Average d.	Average Index.	Average Index of both sexes.
Polynesians (mostly Sandwich Islanders) ¹	♂	22	105.3	42.2	40.1	
Low caste natives of Central and Southern India, mostly ♂	..	42	99.5	41.2	41.4	
Mesodont Races.						
Chinese	♂	12	98.8	42.1	42.6	
American Indians of all parts ..	♂	31	99.2	42.5	42.8	
Malays of Java, Sumatra, &c. ..	♂	70	99.7	43.2	43.3	
African Negroes of all parts ² ..	♂	44	103.0	44.5	43.2	} 43.9
	♀	26	97.9	43.6	44.6	
Megadont Races.						
Melanesians (of various islands) ..	♂	21	102.3	45.2	44.2	
Andamanese ³	♂	9	94.4	41.9	44.4	} 45.5
"	♀	8	88.8	41.2	46.5	
Australians	♂	22	102.5	45.9	44.8	} 45.5
"	♀	14	95.5	44.0	46.1	
Tasmanians	♂	9	100.0	47.5	47.5	} 48.1
"	♀	4	95.5	46.5	48.7	

DISCUSSION.

Mr. HYDE CLARKE ventured to express a wish that Professor Flower had given the maximum and minimum in each case, as he had simply quoted the averages. An average, he would remark, was not a scientific fact, but rather an amusement of statisticians. In natural science it amounted to the suppression of individuality, and thereby of the real elements of description, definition, and classification. The method of their President was a tentative one, but he had great hope that it would afford a convenient medium for the ready determinations of characteristics, as, indeed, the teeth themselves had done in Zoology, and thereby give to anthropological determinations a definiteness which they had not hitherto obtained. He believed that the very determination of the distinctions and differentiation between male and female dentition might prove ultimately a criterion for determining the influence of mixture on races.

Dr. WALTER COFFIN begged the privilege of thanking the President, on behalf of the dental profession, for a very suggestive paper on a matter of great interest to them. The measurement which Professor Flower would doubtless find it convenient to call

¹ The teeth are actually larger than in Europeans, but the index is reduced by the great length of the *basis craniæ*.

² In these again the index is reduced by the great length of the *basis craniæ*.

³ It is the relative but not the actual size of the teeth which brings these small people into the megadont series, among the races to which in many other respects they are allied.

the "mesio-distal molar length," was an important one, and conveniently made upon the living subject, though unfortunately the other factor of the Professor's "dental index" must be otherwise inferred during life. Perhaps the most interesting point brought out by the statistics was that the European races were really within one group—the Microdont; this fact bearing upon the theories as to the pathological conditions presented in dental crowding and certain forms of irregularities. It was highly important to know something of the distribution of variations within the range of the groups averaged; and especially of the frequency of *exceptional* ones at the limits.

Mr. LEWIS inquired whether the teeth in all races were of the same proportions, or nearly so, as it seemed that the observations of the President were based solely on the space occupied by the three molars in line. He congratulated the President on having taken up a line of investigation which was apparently not only new, but likely to lead to important results:

The following paper was read by the author :—

A HINDU PROPHETESS.

By M. J. WALHOUSE, Esq.

ABOUT five-and-thirty years ago, in 1850 or 1851, when the Company still bore rule, I was posted in one of the Madras provinces on the borders of Mysore, a jungly region, thinly sprinkled with villages; and one day received information from a Tahsildar, or native magistrate, that a certain woman, credited with supernatural powers, was causing terror and annoyance in his neighbourhood from the belief that she could inflict cholera, so that people were leaving their villages on her approach. I directed him to send her to me, but he replied that none of his peons, *i.e.*, native policemen, dared meddle with her, and requested me to send some of my own. So I despatched two constables, both Mussulmans, who despised all Hindu superstitions, and they returned with her in custody, for she made no resistance to authority directed by an European. She proved to be a woman somewhat over thirty, rather tall, of composed, reflective demeanour, with no assumption of any unusual powers. She had a long thin visage, a fixed dreamy gaze, a slow, measured way of speaking. She belonged to the agricultural class, and was commonly spoken of as *Ammāl*, *i.e.*, Lady or Madam; her name was Nágamani, or "Snake-necklace," an allusion to the ornament worn by Siva. Her only attendants were a large black monkey

and an idiot boy. I could not find that she had any system of extortion by threats or striking terror, but that she proceeded from village to village in a manner somewhat inconvenient to the people, for when she wished to move on she signified her intention to the headman of the village, who at once supplied bearers, who carried her in a sort of litter in which she travelled, of course without payment, and none dared refuse, or leave her without permission. Whilst she stayed in a village the people would bring her food, and often seek her judgment on family matters and quarrels, disputes respecting land, caste, and questions interesting to villagers. She would give a brief decision, and intimate that the curse of the god would follow disobedience, and it was affirmed and believed that some mishap was always found to result from neglect of her award. Losing parties were naturally galled, and after some stay in the village any accidents, cases of cattle-sickness and the like, came to be attributed to her displeasure, and hence, though she was not accustomed to use threats, the villagers were generally glad to see their visitor depart.

I told her that these circuits and visitations could not be permitted, and required her to give them up. She replied quietly but steadily that she could not without the sanction of the god. There was a good deal of sickness about; harsh dealing with her might have had bad effect, and there was indeed no special ground for it. So I ordered her to be kept in confinement as a vagabond for the present. She obeyed passively, only saying that whilst confined no food should pass her lips. The jailor, a grim, fanatical old Mussulman, thoroughly despising all infidel idolatries and superstitions, asked me what food she was to have; she had a good deal of money with her, and a large amount of bits and pieces of silver, so I told him to provide her with good food, as she could pay for it, and to take note whether she ate any, mentioning what she had said. The old fellow grinned scornfully and said she should not deceive him. After about a week, however, he came to me and said, "Sir, the woman eats nothing; not a grain of her food is touched." I answered, "She is cheating you in some way: watch well. You have spies, see that no other food is conveyed to her." But after a few more days he again came and declared that she still ate nothing; that she made no complaint, did not appear to suffer at all, and that he was certain no other food reached her, unless through the Shaitan! So I went to see her, and found her looking just the same, and apparently quite unaffected by more than a fortnight's fast. Being then alone with her, and observing she was less disposed to be reserved, I desired her to give an account of herself and her way of life. Raising her eyes

with a far-away visionary look she slowly answered that when a girl, near Seringapatam, she was passing through a jungle when she met the god Siva face to face! "He entered my bosom," she said. "He abides in me now; my blessing is his blessing, and my curse is his curse! He speaks through me: the village people ask me questions. I know nothing of the matters. He speaks with my tongue: it is he who commands!" "Has he left you now that you are in prison?" I asked. "He has given me no order," she said; "he is my strength: when he desires I shall go." She spoke in a calm, unimpassioned way, as one thoroughly assured. She seemed to consider herself freed from the ordinary rules and observances of Hindu life, which is at almost every hour governed by ceremonials connected with astrology and the changes of the moon: the constantly recurring fasts and festivals were disregarded by her. Those who know Hindu inner life will understand how great such heresy would seem; but she did not pretend to be a devotee, nor to any knowledge of magic and spells in which Hindus in every rank firmly and abjectly believe, though such pretence would certainly have increased her influence. There is nothing that more colours Hindu life than the belief in the efficacy of *Mantras*—certain forms of prayer or powerful words—by which all the changes and relations of life may be influenced for good or ill, and the gods even may be bound. This idea runs through all Indian literature, and operates in all business and undertakings. Only Brahmins and devotees can properly know and use these powerful words, and they are forbidden to women; but vulgar magicians often pretend to their knowledge. This woman was said to use one Mantra, the *Panchāxāram*, or Five-lettered Spell. Laying her hand on a string of the rough round excrescences commonly called Brahmaing beads—properly *Rudrākshas*, i.e., eyes of Siva, because said to have been tears wept by him—she would utter over them the words *Nama Sivaya* (Salutation to Siva), whereby the beads became endowed with fortunate properties. The Brahmins must have regarded this much as a priest would regard a layman pronouncing the absolution, for it is a great and holy Mantra, but they held their peace; once, indeed, in a well-known Hindu poem a princess is recorded to have learnt and used it, with miraculous effect.

However, not to be tedious, after this woman had been in confinement some five weeks, during which she conducted herself very quietly, and it could never be discovered that any food passed her lips, it seemed unadvisable and useless to detain her, so I proposed to send her back to her own neighbourhood of Seringapatam. She acquiesced, and I caused the many pieces of silver she had to be sold, gave her the proceeds, nearly four

hundred rupees, and sent her across the Mysore border with her monkey and the idiot boy, who had meanwhile been well cared for by the villagers. It was not a very safe country to travel through, but her reputation was a sufficient safeguard, and I never heard of her afterwards.

It seemed to me that her case enabled one in some measure to realise those stories of women of commanding influence who have from time to time appeared in all ages and countries; and amid cultivated, no less than rude and barbarous, races exercised a mysterious power, and left an impression that time and change failed to efface. Such were those problematical personages the Sibyls—vessels of the Deity, as the word is said to imply—whether they numbered four or ten, for all traditions concerning them are indistinct and cloudy: certain, however, it is that the writings of one of them were treasured through the early centuries of Rome, and solemnly consulted in all emergencies and the verses still extant, called Sibylline, were held in reverence by the early Church, and quoted concurrently with Scripture.¹ On the walls of the famous Sistine chapel in the centre of Catholic Christendom the mightiest genius of modern art has depicted the Sibyls seated with the great prophets of the Law in sublime contemplation of the unfolding of the Christian dispensation. In the old world for many ages the Pythian priestesses were held in the highest reverence. That long line of venerable and august virgin prophetesses is one of the strangest and least understood phenomena of antiquity. All we know is that, like the Sibyls, the god was held to possess and speak through them, when inspired by the mysterious exhalation. They too must have been women of that strange personal authority that forces men to listen and obey. Amid the acutest and most civilised nations of antiquity their reputation was maintained for ages. All sought their counsel, States and kings as well as individuals, and it is not probable such a state of things would have continued without general success, or even with much failure; nor is it to be supposed, according to modern popular notions, that all was trickery and collusion.

“Never from lips of cunning fell
The thrilling Delphian oracle.”

In Holy Writ, too, we read (*Judges iv*) that “Deborah the prophetess judged Israel; and the children of Israel came up to her for judgment” as she sat under her palm-tree; and with triumphant inspiration she sang that great ode of victory and exultation over the defeated King of Canaan.

¹ Dies iræ—dies illa.
Solvet sæculum in favilla,
Teste David cum Sibylla.

No less, too, the rude and warlike tribes that journeyed from the German forests to overthrow and destroy the civilisation of the Roman world acknowledged the mystic influence of prophetic women, and regarded them even as goddesses. Those huge-limbed warriors, who lived but for war and battle, bowed with unbounded reverence to the Alruna maidens, who from their retreats in caverns or river-islands delivered the mandates of the gods and inspired unconquerable courage. In the reign of Vespasian, one of them, called by Roman historians Veleda, by her inspiring prophetic utterances incited her countrymen to withstand for a considerable period the advance of the Romans on the Rhine. A distorted tradition of those awe-inspiring women, in a malignant and evil aspect, may have been in Shakespeare's mind when he drew the weird sisters—no vulgar witches in his view, but postlers of the sea and land, commanding the winds and tempests and stirring up the evil passions of men to deadly issues; and Walter Scott has pictured the last descendant of the Alruna prophetesses of the North in Norna of the Fitful Head, the stately old Reimikennar, who knew the runes, could stay the tempest, look into the future, and whose ban was universally dreaded.

It seems of some anthropological interest to note the appearance from time to time in widely separated ages, lands, and races, of remarkable women, distinguished by the same general characteristics, claiming the same preternatural experiences and powers, and leaving a lasting impression on popular remembrance. Still the traditions of them convey picturesque and striking images:—the Sibyl, royally arrayed, in her cavern, overladen, and striving with frenzied action to shape the divine message into utterance; the Pythia, long-robed and crowned with the mystic fillets of wool, seated on the tripod, awaiting the inspiration of the god; and the stately Veleda, shut in her tower by the Rhine, invisible to all, except the chosen kinsman who received and imparted her commands (*Tacitus, "Hist."*, iv, 65).

Some may have noticed in the gardens of the Luxembourg the fine statue in which one of the best French sculptors has embodied his conception of this grand seeress. I will conclude with one of these weird women, once famous in England, and hardly yet forgotten. In 1686 a curious pamphlet was published in London giving an account of Mother Shipton, "the Yorkshire prophetess." She was born in the reign of Henry VII, and, the chronicle says, "got a name far and near for a cunning woman, or a woman of the foresight, so that her words began to be counted." She was of tall and somewhat forbidding presence, and vulgar talk soon invested her with the traditional witch-attributes and ascribed her birth to diabolical parentage. It is recorded

that not only private persons resorted to her, but "people of the greatest quality;" amongst them Cardinal Wolsey, of whom she said, when it was reported that he intended to retire and live at York, that he should never come thither, and indeed when within sight of York he was suddenly recalled by the king's messengers, and died soon after at Leicester. Like the Pythia she at times delivered obscure prophecies in rough verses, several of which, it is recorded, were taken down by the Abbot of Beverley, and kept in the Abbey till the dissolution. Some have been handed down, and held to foreshadow the Great Fire of London, the reign of Elizabeth, the execution of Charles I, and other public events. Not long ago a series of clever forgeries attributed to her were put into circulation. During her long life this "famous prophetess and Sibyl," as she is termed, appears to have maintained her reputation, and died at the age of seventy-three on a day predicted by herself. She left a deep impression on popular memory, not yet effaced, and even now shares with royalty and great personages the distinction of being adopted as a sign for inns,—there is a well-known example here in northern London,—and still when the East-end mechanic goes on a holiday in early summer entomologising, as many do, he looks in the hay-fields for a day-flying moth, in the lines and marks on whose wings the features of a human face with long crooked nose and chin are thought to be discerned, and calls it "the Mother Shipton."

The following paper was read by the author, and illustrated by the exhibition of a large collection of implements:—

*On certain LESS FAMILIAR FORMS of PALÆOLITHIC FLINT
IMPLEMENTs from the GRAVEL at READING.*

By O. A. SHRUBSOLE, F.G.S.

[WITH PLATE XI.]

THE purpose of the present paper is to draw attention to some of the less familiar forms of palæolithic implements. As, however, most of the specimens to which reference will be made have been obtained from the high-level gravel of the Thames valley near Reading, it may be convenient in the first instance briefly to refer to that gravel, and to the conditions under which the implements have occurred, in order to arrive at some approximate idea of their geological age. I do not in any way

regard the forms as characteristic of this locality. It simply happens that it has not been convenient to explore other gravels with the same minuteness as is requisite to procure these minor and somewhat neglected forms.

Implement-bearing gravel is present at Reading at various points. The precise point from which most of the examples have been taken is the Grovelands gravel-pit, situated on the south side of the Thames, at about a mile from Reading, on the road leading to the village of Tilehurst,¹ and at an elevation at the surface of 79 feet above the level of the Thames at the nearest point, and 197 feet above the sea level. The hill at Caversham on the opposite side of the Thames contains a thin deposit of implement-bearing gravel at a still greater elevation than that, namely, 113 feet above the *river* level. It will thus be seen that we are concerned with some of the older gravels of the Thames valley.

Flint implements, when they occur here, appear to be related to the basal part of this gravel. Their occasional occurrence also at the top, in a zone of whitish flint, has to be accounted for. It is possible that this may represent a later epoch of man's occupation of the district. There is no great difference in type so far as can be judged at present. The difference of patina and external condition is obvious, but that is not a radical distinction. So far as one can judge from a limited number of specimens, the nature of the flint used and the frequent utilisation of outside flakes, and of pebbles, appear to indicate that, when the implements near the surface were fabricated, good flint material was scarce, which may agree with the post-Glacial origin of at least this upper portion of the gravel deposit.

Regarding the depth at which flint implements are usually found in other localities, there is a mass of evidence showing that the relics of man are met with chiefly, although not exclusively, at the very deepest part of the high-level gravel deposits.

The depth at which implements have been found in the valley of the Somme is well known. At Mesvin, near Mons, they occur "at the base of the gravel."² Various instances are named by Dr. Evans relating to the valleys of the Ouse, Lark, Little Ouse and Thames (Acton). General Pitt Rivers states emphatically that the implements at Ealing Dean were all found to lie "almost invariably at the bottom of the gravel." Some of the implements found by Mr. Worthington G. Smith in north London, were at 12 feet and 30 feet respectively from the surface.

¹ A description of this deposit, with figures of many of the implements found in it, by Dr. Joseph Stevens, will be found in the "*Journ. Brit. Archæ. Assoc.*," 1881.

² A. Eriart, *Rapport Société des Sciences, &c.* (Hainaut, 1872).

Without going into the question of gravel deposits of different geological age, the general fact seems prominent, that when these are implement-bearing, the implements, if of one age only, are found not far from the base, and this position seems significant of the fact that the implements are at least as old as the gravel itself, and perhaps older.

Referring to our Reading gravels, how comes it, we may ask, that a great part of the deposit gives little or no sign of human existence? According to the formerly-received view—in post-Glacial times, but still under rigorous climatic conditions, a race of palæolithic men inhabited the banks of these rivers, but as the climate gradually improved, and the snows melted, the race also disappeared. Nor could this, although post-Glacial, have been a very recent event, for these slow-flowing rivers have (according to this theory) first covered up the great mass of the implements with 10 feet or so of gravel, and then excavated their channels, as at Reading, as much as 75 or even 113 feet deeper, thus doing, in a portion of the post-Glacial era, immensely more work than had been done in all the previous Miocene and Pliocene times. Now, it is obvious that the Thames, for example, is not deepening its channel. It possesses no erosive power, and during the present geological epoch there has been nothing, as far as I can conceive, which could have given it any considerable erosive power. The power by which a river erodes and deepens its channel is that of gravitation aided by the coarse detritus borne by its stream; but, if the fall of the river be not great, this detritus becomes a burden, and is deposited in the river-bed, or on its banks in time of flood. Moreover, if the excavation of the Thames valley were the work of post-Glacial times, through what channels, it may be asked, was the drainage of the land effected in post-Eocene times?

These are the difficulties which beset the theory of the post-Glacial formation of our high-level gravel by the present rivers; and I have long been unable to satisfy myself that this theory is the correct one. The newer views propounded by Professor James Geikie and Mr. Searles V. Wood, F.G.S., have appeared to me to present the better explanation.

Professor Phillips has shown by a sketch map in his work on "The Geology of Oxford and the Thames Valley" that the effect of a submergence of only 250 feet would be to introduce the sea into the entire Thames valley system, converting it into a sea-loch. Mr. Searles V. Wood, who has made this subject peculiarly his own, regards the high-level gravel of the Thames valley as having been formed during the depression and subsequent emergence of this part of Britain. The gravel and sand associated with *Cyrena (Corbicula) fluminalis*, he regards as a distinct

formation, and as having been accumulated during a later re-deposition of moderate extent. I do not myself offer an opinion upon this point, merely observing that in some places we must expect the gravels to have become somewhat mixed up.

With regard, then, to the implements found at the basal portion of the gravel at Reading, they may be Glacial or pre-Glacial according to Mr. Wood, or, according to Professor Geikie, inter-Glacial or pre-Glacial.

What seems to be indicated by the facts is that before Great Britain became unsuited to support mammalian life by the advance of the great ice sheet, or by submergence, a population existed at least in the southern and eastern parts of England. Various considerations would lead us to suppose that, before the cold became intense, that population had spread over those districts in which the supply of freshly-quarried flint was plentiful and the other conditions of life were favourable. At what precise epoch this migration took place, the materials at present available do not enable us to determine.

The occurrence of pebbles of quartz, quartzite, &c., from the Triassic conglomerates in the Thames valley gravels has been sometimes relied upon as evidence of their post-Glacial age. To this it may be said that gravel may exist under conditions not adapted to support human life, and therefore, for the origin of the implements on which the gravel is superimposed, we may have to look back to a period which shall present the necessary conditions. Pebbles of quartz and quartzite, moreover, have been found in the basement bed of the Norwich crag,¹ showing that their dispersion commenced at a very early period in that epoch which is covered by the wide term Glacial.

The organic remains which have been met with at the Grove-lands gravel-pit comprise *Equus*, *Bos*, *Elephas primigenius*, *Cervus* (sp.), and *Rhinoceros tichorhinus*. No contemporaneous shells, whether marine or fluviatile, have, so far as I know, been met with.

Implements do not occur in much abundance in the Grove-lands gravel. *Haches* of the fine-pointed type, such as have been found in the Bedford gravels, at Acton, and in north-east London, have not hitherto been met with. The instruments found are more or less ovate, of moderate size, and abraded, or worn by use. Large and very rude tools are also met with.

I now propose to describe some of the forms of implements found here which to me have proved the most interesting. My experience leads me to concur in the remark of Mr. W. G. Smith that "no greater mistake can be made than the getting together

¹ H. B. Woodward, in "Quart. Journ. Geol. Soc.," 1884, p. 294.

of the more highly-finished and perfect implements," if this be done to the exclusion of implements which not the less truly carry the evidence of human fabrication.

With the intention, therefore, of rejecting nothing that can throw light upon the habits of life of ancient races, I have not thrown away any flint, however slightly it may have been worked, if it has appeared to me to indicate intelligent intention and purpose. The few visits which I have paid to other implement-bearing gravel deposits have convinced me that these less recognised forms are not peculiar to any one locality. They do not, however, as a rule, find their way into museums, or much attract the notice of collectors.

Grooved or hollowed scraping, planing, and polishing tools.

I do not pretend to have been the first observer of tools of this type, but I wish to draw attention to their general prevalence and abundance in the gravels. It does not appear to have been sufficiently recognised that, with man in a primitive state, availing himself mainly of the natural forms of growth of wood, of bone, or of horn, his joinery-tools (so to speak) must necessarily have been incurred in outline, so as to be adapted to the form of the material operated upon. Thus, in man's early stages, almost everything that he has to do with is rounded. His hut is frequently round, and the poles which support it or form the flooring (where such exists), his spear, his club, his arrows and bow, his weapon handles, are rounded also.

A marked form of this type of implement is shown in Plate XI, fig. 1, which is a thin flake with a semi-circular recess worked in one side of it, and worn as if by repeated use. Tools of this kind, referable to the Neolithic period, have been already recognised under the designation of "hollow scrapers," a term which, although it has the merit of having come into general use, somewhat vaguely describes the peculiar instruments referred to. In the Pitt Rivers collection these forms are described as "planes for forming the shafts of spears and arrows."

As regards the Cave period also these forms have been met with in various localities. Several are figured and described in the "Reliquiae Aquitanicae."

Unless we have formed an *à priori* opinion that the men who fabricated the palæolithic gravel implements were savages just capable of chipping stones and nothing more, it would seem natural to suppose that the same type which presents itself in the caves would be present in the gravels also. Such is indeed the case; but owing to the unpretending appearance of these tools their relative abundance has not been generally suspected.

Individual specimens have been occasionally referred to.¹ I believe they will be found to be common in all implement-bearing gravels.

At the Grovelands gravel-pit, for instance, they are far more numerous than *haches*, as might be expected. They are also much more abundant than any other form of scraping tool, and I think I may go so far as to say that they are more abundant than any other form of tool whatever. The same may be said of other localities which have been worked with the same minuteness. Fig. 7, for instance, the first implement found, I believe, by any one in this locality, approaches this type, as having apparently been used for scraping.

When a series of these tools is examined it becomes evident that they were not only "used for scraping," but were intended to be so used. It would not be just, I venture to think, to characterise them as casual make-shifts. Many of them, no doubt, were quickly made; and the varieties of the type are so numerous that it seems to be indicated that the uses to which they were put were various, and also that there was less conservatism of form in regard to these every-day tools than there was in regard to the more elaborate implements. Although doubtless any convenient flakes of flint were generally utilised, and in some cases with a slight amount of preparation, yet it is obvious that in other cases a considerable amount of pains was taken, the hollow having been carefully punched out.

Fig. 2 will exemplify this. The tendency of the type is to develop into a crescent-shaped outline, as in fig. 3. It does not appear to me likely that, if the curved edge were of more utility than a straight one, the desired form would have been obtained by the slow and laborious process of rubbing anything less hard than flint itself.

The *hache* itself, or a *hache*-shaped implement, was frequently used as a scraping tool.² Figs. 4 and 6 will illustrate this. I have observed the scraping-groove in instruments from St. Acheul near the apex, which is not a point but a chisel-like termination. It is amusing to notice that sometimes the well-intentioned zeal of the gravel-digger has apparently corrected this deviation from the orthodox weapon-type. One implement, also from St. Acheul, presents this character very distinctly. In addition to a slight scraping-groove near the apex, it has a semi-circular depression in one side, which is worn smooth except at the edge. Possibly it may have been also used to render thongs of leather supple or pliable, for which purpose the Eskimo are said to use the teeth.

¹ Dr. Evans, "Ancient Stone Implements," pp. 499, 515. 532.

² See Dr. Evans's "Ancient Stone Implements."

A few illustrations are given in order to convey an idea of the variety of form which this type of instrument exhibits. These varieties may, in a rough sort of classification, be arranged under three sub-types.

1. The compound or combination scraper, presenting both a curved and an incurved outline, or otherwise subserving some other use.

2. The scraper proper, whether small in size and held between the fingers and thumb, or fitting the palm of the hand. Some have a duplication of the grooves or hollows, and might be called pin-polishers.

3. The hollow chisel or plane, the curved recess being at the *extremity*, not the side of the instrument, as fig. 11. Usually this tool is sufficiently large to admit of the application of considerable muscular force. It might be described as a two-handed plane or shaving tool.

Fig. 10 is an interesting example of this class. It doubtless originally had a sharp planing edge, but it has the appearance of having been thoroughly worn out in use.

Little need be said as to the significance of the constant occurrence of tools of this class in these ancient gravels. Ancient they must be, whatever theory of their origin we accept; but they do not reveal to us any traces of an absolutely primitive condition of man. Any race which shaped these scraping tools must have had a long period of development behind it, since the mental power indicated in the preparation of tools wherewith to manufacture other tools, and the skill indicated in the working of the other instruments found, demand for their evolution a very considerable antiquity.

Forms such as these serve to connect the river-gravels, so-called, more closely, from an archaeological point of view, with the cave-deposits. We cannot, on account of the greater energy of the destructive forces which have operated in the case of the gravels, produce from that source bone pins, harpoons, or arrow tips, but we can produce the tools with which in all probability these were prepared and polished.

There is no kind of scraping tool found in the caves which has not its prototype in the gravels. The evidence, whether from the one stage or the other, seems to show that the pointed instruments of palaeolithic man were mainly of bone or horn. I submit, then, that we must not expect the gravel to yield more than can be fairly required of it. Let it be remembered that, in gravels of this age, not a single contemporaneous shell has, as far as I know, been found. Whether the men who fabricated these implements were acquainted with the uses of the bow and arrow is a question which the evidence does not permit us to settle either way.

I am *not* disposed to regard these Reading implements as forming a link connecting the older gravel period in time with that of the caves of the reindeer period.

They show rather how slow has been the march of human progress, and that the different stages have more in common than is sometimes supposed.

Knives or cutting tools.

No one who is familiar with the contents of a palæolithic gravel-pit can have failed to recognise the large number of flakes that frequently occur. It is obvious that many of these are not the *débris* of manufacture.

General Pitt Rivers has classified these flakes as "ridge-flakes," "slice-flakes," and "large flakes." The forms which they individually present are, I think, a guide to their probable use. It only needs experiment to demonstrate that the natural edge of a flint flake is sharper than any edge that can be obtained by chipping. I regard, therefore, these flakes as cutting tools when not scraping tools. The small or two-edged flake would be used for purposes where little force was required. The large flake with a thick end capable of being grasped in the palm would be a powerful cutting tool. The edge, it is true, would quickly fracture, but the tool itself would be quickly made.

The heavy "chopper" (so called)—the type, for instance, of Le Moustier—seems intended to act more by its weight than anything else.

Fig. 8 represents an interesting relic from the Grovelands gravel-pit, namely, two pieces of bone which bear the marks of some sharp cutting instrument both at the ends and on the surface, which appears to have been scraped. On showing the bones to Mr. William Davies, of the British Museum, he at once saw that they were parts of the radius of a *Bos*, which had been split. The pieces when fitted together still leave a gap longitudinally. Such pains as these fragments indicate can hardly have been taken *merely* to extract the marrow.

Wedges.

In fig. 5 I have represented a form which I at first took to be a scraper with the recess very carefully chipped.

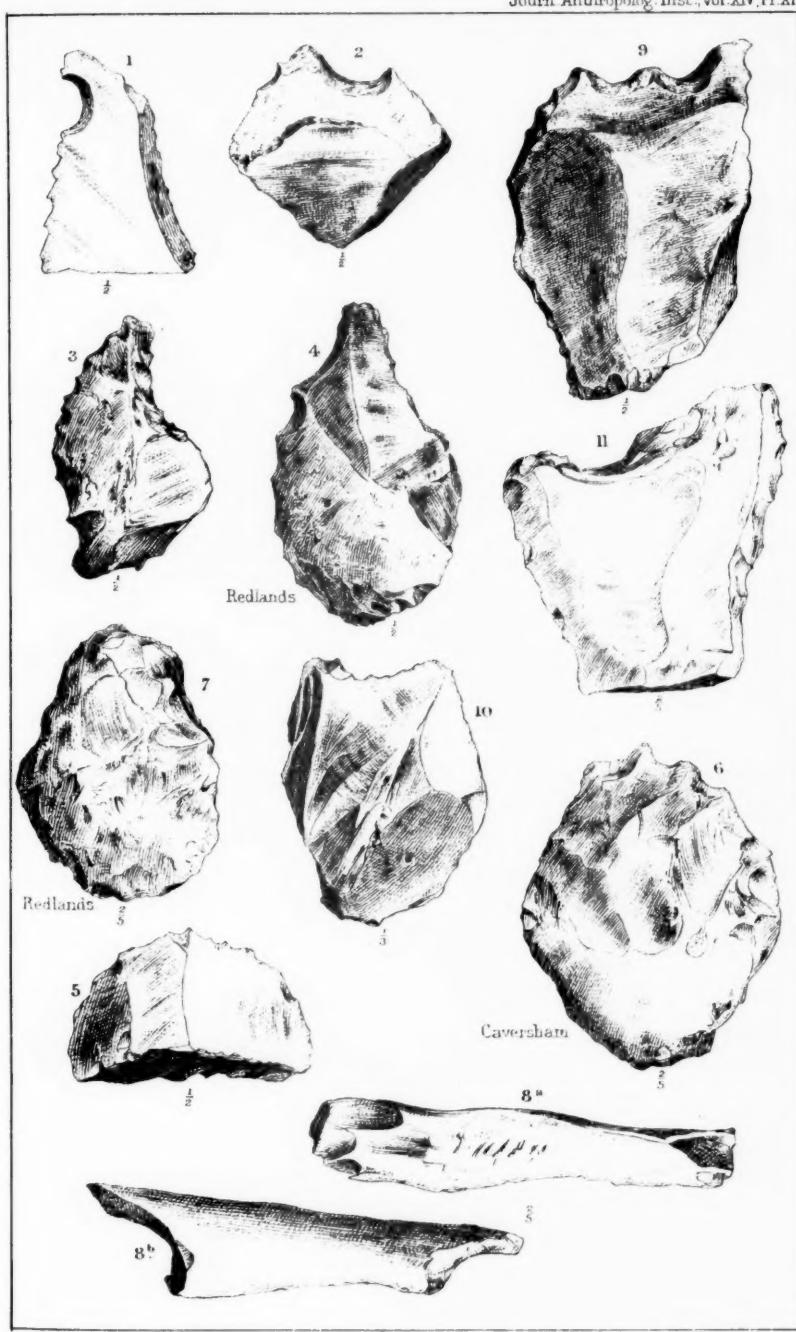
Since finding other allied forms, however, I propose to regard it as a wedge until some better interpretation of it can be found. The hollow in the thick end would answer the purpose of preventing the mallet from slipping when a blow was struck, or would receive a piece of wood to deaden the blow.

Saws.

Fig. 1 seems adapted to perform the functions also of a saw. It is not quite an isolated example.

Description of Plate XI.

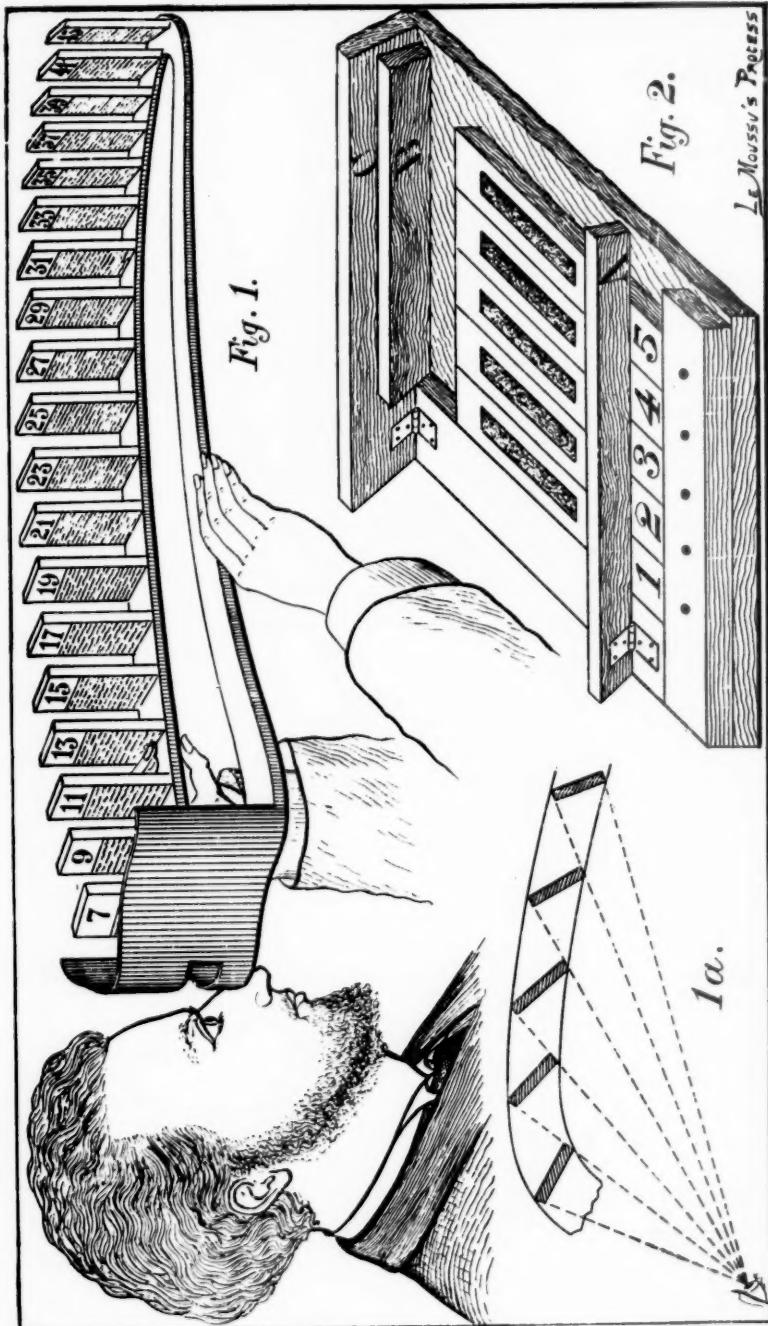
- Fig. 1. } Hollowed scrapers or polishers. Fig. 1 is also a saw.
" 2. }
" 3. Convex and concave scraper.
" 4. Hand polisher and scraper.
" 5. Wedge. The thick end hollowed.
" 6. Multiple-grooved polisher. Hache type.
" 7. Probably a scraping tool. Much abraded.
" 8. *a* and *b*. Two halves of a portion of a radius of *Bos* split longitudinally, showing work done by a cutting tool at each end. The fine notches on the surface might be made by a similar tool in the process of scraping.
" 9. Double-grooved polisher.
" 10. and 11. Planes for working cylindrical surfaces.
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O.A. Shirabole, del.

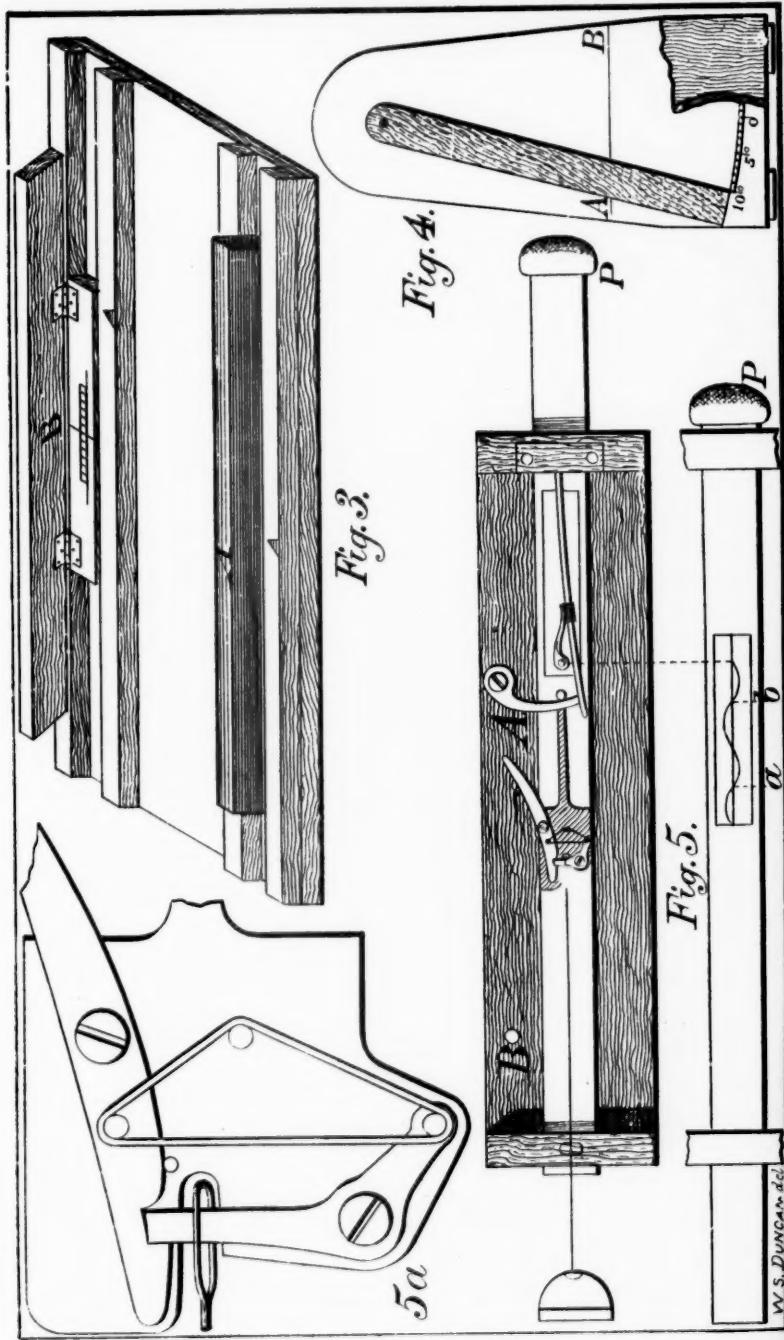
J.P. & W.R. Finslie, lith.

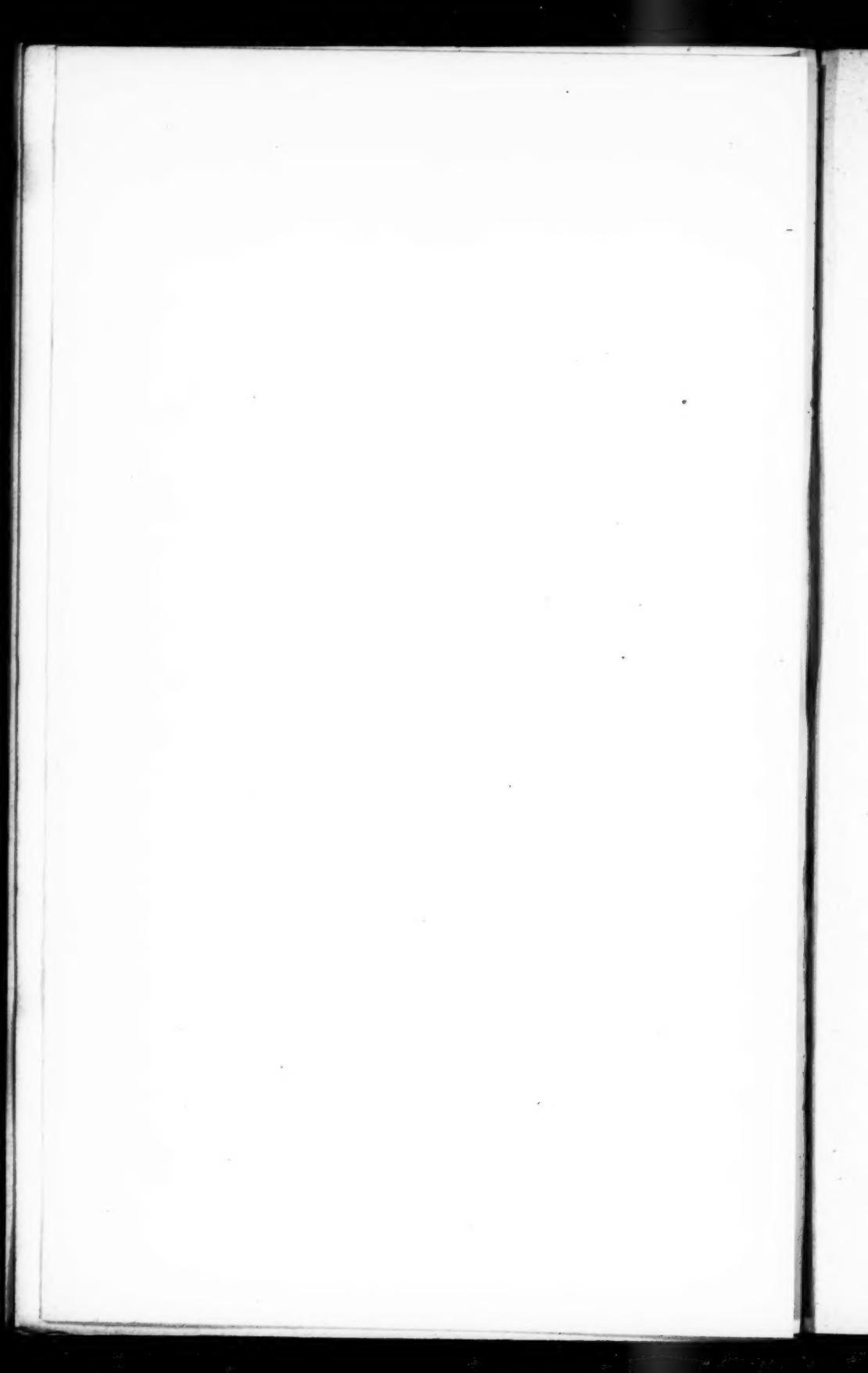
FLINT IMPLEMENTS, &c., FROM READING.



ANTHROPOMETRIC INSTRUMENTS.

Le Nouveau's Process





THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
GREAT BRITAIN AND IRELAND.

NOVEMBER 11TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From BARON FERD. VON MUELLER.—On Plants used by the Natives of North Queensland, Flinders and Mitchell Rivers for Food, Medicine, &c. By Edward Palmer.

From the SECRETARY OF STATE IN COUNCIL OF INDIA.—The Indian Empire. Census of 1881. 3 Vols.

From the PRESIDENT OF THE UNIVERSITY OF TOKIO.—Okadaira Shell Mound at Hitachi. By I. Iijima and C. Sasaki.

From the SECRETARY OF THE COMMONWEALTH, MASSACHUSETTS.—Forty-second Report to the Legislature of Massachusetts for the year 1883.

From the ASSISTANT CURATOR OF THE GOVERNMENT CENTRAL MUSEUM OF MADRAS.—Report on the Working of the Museum for 1883-1884.

From DR. EMIL RIEBECK.—Die Sammlung des Herrn Dr. Emil Riebeck.

From GEORGE W. BLOXAM, M.A.—Proceedings of the Athenaeum Society. Nos. 1, 2.

- From the AUTHOR.—A new Stand for Skulls made by Edward E. Chick. By F. W. Putnam.
- Abnormal Human Skulls from Stone Graves in Tennessee. By F. W. Putnam.
- Remarks upon the Antiquity of Man in America. By F. W. Putnam.
- Circular relative to Contributions of Aboriginal Antiquities to the U.S. National Museum. By Charles Rau.
- New points in the History of Roman Britain, as illustrated by Discoveries at Warwick Square, within the City of London. By Alfred Tylor, Esq.
- Allgemeine Grundzüge der Ethnologie. By Dr. Adolf Bastian.
- Scientific Basis of Eclecticism in Medicine. By C. A. F. Lindorme, Ph.D., M.D.
- Mémoire sur quelques points de Tératogénie en réponse a un travail récent de MM. Fol et Warynski. By Camille Darest.
- An Examination of the Trade Dialect of the Naqqásh or Painters on Papier-maché in the Punjáb and Kashmir. By Capt. R. C. Temple, B.S.C.
- The Social and Political Position of Women among the Huron-Iroquois Tribes. By Lucien Carr.
- Selish Myths. By W. J. Hoffman, M.D.
- On the Implementiferous Gravels near London. By T. Rupert Jones, F.R.S.
- Sur la valeur Morphologique de la Trompe d'Eustache, &c. By M. le Prof. Paul Albrecht.
- Sur les Spondylocentres Epipituitaires du Crane, &c. By M. le Prof. Paul Albrecht.
- A Manual of the Nilagiri District in the Madras Presidency. By H. B. Grigg, B.A.
- On some Vestiges of Roman Occupation between West Hartlepool and Seaton Carew. By R. Morton Middleton, Junior, F.L.S.
- Antiquity of Man as deduced from the Discovery of a Human Skeleton at Tilbury, North Bank of the Thames. By Sir Richard Owen, K.C.B.
- New Guinea Bibliography. By E. C. Rye.
- The Social Emancipation of the Gipsies. By James Simson.
- Extract from the Zoological Results of the Voyage of H.M.S. Alert. 1878-82. Mammalia. By Oldfield Thomas.
- Sujets décoratifs empruntes au règne animal dans l'Industrie Gauloise. By M. le Baron Joseph De Baye.
- Héritage de la Couleur des Yeux dans l'espèce humaine. By M. Alph. de Candolle.
- Proben der Sprache von Ghāt in der Sāhārā mit haussanischer und deutscher Uebersetzung. By Gottlob Adolf Krause.
- The Sugar Industry in Queensland. By H. Ling Roth.
- From the ROYAL ASIATIC SOCIETY, CEYLON BRANCH.—Translations from the Páli of Játakas 41-50. By the Lord Bishop of Colombo.

- From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE, &c.—Archiv für Anthropologie. Band XV, 3.
— Correspondenz Blatt. June—August, 1884.
- From the SOCIETY OF ANTIQUARIES.—Archæologia, Vol. XLVIII.
- From the SOCIEDADE DE GEOGRAPHIA DE LISBOA.—Expedição Scientifica à Serra da Estrela em 1881. (1) Secção de Medicina Subsecção de Ophthalmologia. (2) Secção de Archeologia. (3) Secção Ethnographia.
- Le Zaire et les contrats de l'Association Internationale. By C. Magalhães
- Plantas uteis da Africa Portugueza. By Conde de Ficalho.
- From the SOCIETÀ ITALIANA DI ANTROPOLOGIA.—Archivio per l'Antropologia e la Etnologia. Vol. XIV, Fas. 1.
- From the GEOGRAPHICAL SOCIETY OF THE PACIFIC.—Arctic Drift and Ocean Currents. By Charles Wolcott Brooks.
- From the SMITHSONIAN INSTITUTION.—Smithsonian Report, 1882.
- From the DEVONSHIRE ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The Devonshire Domesday. Part I.
— Report and Transactions. Vol. XVI.
- From the SOCIETÀ GEOGRAFICA ITALIANA.—Terzo Congresso Geografico Internazionale. Vol. II.
- From the BERLINER GESELLSCHAFT FÜR ANTHROPOLOGIE.—Zeitschrift für Ethnologie 1884. Heft. 3.
- From the BATAVIAASCH GENOOTSCHAP VAN KUNSTEN EN WETENSCHAPPEN.—Tijdschrift voor indische Taal-, Land- en Volkenkunde. Deel. XXIX, Afl. 2, 3.
- From the LEEDS PHILOSOPHICAL AND LITERARY SOCIETY.—The Annual Report for 1883—4.
- From the ACADEMY.—Atti della R. Accademia dei Lincei, Transunti, Vol. VIII. Fas. 11—15.
- Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg. Tom. XXIX.
- From the ASSOCIATION.—Journal of the East India Association. Vol. XVI, Nos. 4—6.
- Journal of the Royal Historical and Archæological Association of Ireland. No 57.
- From the INSTITUTION.—Proceedings of the Royal Colonial Institute. Vol. XV.
- Transactions and Proceedings of the New Zealand Institute. Vol. XVI.
- Proceedings of the Canadian Institute. Vol. II, Fas. 2, 3.
- From the INSTITUTION.—Journal of the Royal United Service Institution. Nos. 124, 125.
- Journal of the Royal Institution of Cornwall. Vol. VIII, Part 2.
- From the SOCIETY.—Proceedings of the Royal Society. Nos. 231, 232.
- Journal of the Society of Arts. Nos. 1630—1660, 1663, 1664, 1666, 1667.
- Proceedings and Transactions of the Royal Society of Canada. Vol. I.

- From the SOCIETY.—*Schriften der Physikalisch-ökonomischen Gesellschaft zu Königsberg.* 1883, Abth. 1, 2.
 —— *Mémoires de la Société d'Emulation d'Abbeville.* 3^e Ser. 3^e Vol.
 —— *Bulletins de la Société d'Anthropologie de Paris.* 1884, Fas. 2, 3.
 —— *Bulletin de la Société de Borda, Dax.* 1884, 2, 3.
 —— *Proceedings of the Royal Geographical Society.* 1884, July—November.
 —— *Boletim da Sociedade de Geographia de Lisboa.* Nos. 6—9.
 —— *Bulletin de la Société d'Anthropologie de Bruxelles.* Tom. II, Fas. 1, 2.
 —— *Proceedings of the Royal Society of Edinburgh.* Sessions 1881—82, 1882—83.
 —— *Transactions of the Royal Society of Edinburgh.* Vol. XXX, Parts 2, 3; Vol. XXXII, Part 1.
 —— *The Scientific Proceedings of the Royal Dublin Society.* Vol. III, Parts 6, 7; Vol. IV, Parts 1—4.
 —— *Papers and Proceedings of the Royal Society of Tasmania.* 1882, 1883.
 —— *Proceedings of the Society of Biblical Archaeology.* Vol. VI.
 —— *Journal of the Asiatic Society of Bengal.* No. 258.
 —— *Proceedings of the Asiatic Society of Bengal.* 1884, Nos. 3—5.
 —— *Royal Asiatic Society (Ceylon Branch).* *Proceedings,* 1883, and *Addenda to Prof. Rhys Davids' Translation of the Játakas,* 1—40.
 —— *Transactions of the Asiatic Society of Japan.* Vol. XII, Parts 2, 3.
 —— *Proceedings of the Philosophical Society of Glasgow.* Vol. XV.
 —— *Proceedings of the American Philosophical Society.* No. 115.
 —— *Constitution of the Anthropological Society of Washington.*
 —— *Bulletin de la Société d'Anthropologie de Lyons.* 1883, 1.
 —— *Bulletin de la Société Impériale des Naturalistes de Moscou* 1883, 4; 1884, 1.
 —— *Dreiundzwanzigster Bericht der Oberhessischen Gesellschaft für Natur-und Heilkunde.*
 —— *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen.* Deel. XLIV.
 —— *VI, Jahresbericht der Geographischen Gesellschaft von Bern.* 1883—84.
 —— *Notulen van de Algemeene en Bestuurs-vergaderingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen.* Deel. XXI, Nos. 3, 4.
 —— *Procéedings of the Geographical Society of the Pacific.* 1884.
 From the EDITOR.—*Bullettino di Paletnologia Italiana.* Anno. 10, N. 3—6.
 —— *Journal of Mental Science.* Nos. 94, 95.
 —— *Matériaux pour l'Histoire de l'Homme.* 1884, June—October.
 —— "Nature." Nos. 765—767, 769—782.

- From the EDITOR.—*Revue d'Anthropologie.* 1884, Parts 3, 4.
— *Revue d'Ethnographie.* 1884, Nos. 2, 3.
— *Revue Politique.* Tom. XXXIII, Nos. 25, 26; Tom. XXXIV, Nos. 1-18.
— *Revue Scientifique.* Tom. XXXIII, Nos. 25, 26; Tom. XXXIV, Nos. 1-18.
— “Science.” Nos. 71-76, 78-89.
— *The Illustrated Science Monthly.* Vol. II, Nos. 9-11.
— *Timehri.* Vol. III, Part 1.
— *American Antiquarian.* Vol. VI, No. 4.
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The election of the following new Members was announced:—
Mrs. ERMINNIE A. SMITH; F. A. COLBY, Esq., M.D.; HORATIO HALE, Esq., and D. H. TALBOT, Esq.

Mr. FRANCIS GALTON exhibited and described a collection of composite photographs of skulls, made by Dr. Billings, of the United States, which he presented to the Institute.

Mr. H. O. FORBES read some “Ethnological Notes on the ‘People of the Island of Buru.’”

The following paper was read by the author:—

On the ANTHROPOMETRIC LABORATORY at the late INTERNATIONAL HEALTH EXHIBITION. By FRANCIS GALTON, M.A., F.R.S.

[WITH PLATES XII AND XIII.]

Now that the International Health Exhibition is over, and the Anthropometric Laboratory there established has done its appointed work, it is desirable to put on record its methods and experiences. As for the statistical results they are still under discussion and I shall not speak of them now, but I hope before long to communicate these also to the Institute.¹

The object of the laboratory was to show to the public the simplicity of the instruments and methods by which the chief physical characteristics of man may be measured and recorded. The instruments in action dealt with keenness of sight; colour-sense; judgment of eye; hearing; highest audible note; breathing power; strength of pull and squeeze; swiftness of blow; span of arms; height, standing and sitting; and weight. Some other apparatus not in actual use was also exhibited.

The chief motive of this memoir is to invite criticism and

¹ A general statement of the results is printed among the “Miscellanea” at the end of this number of the Journal.

suggestions. Duplicates of the instruments have been ordered by executive officers in foreign countries, and considerable interest has been expressed in the collection by the authorities of many places of education in this country, as well as by numerous private individuals. It seems, therefore, well to lose no time in considering whether any and what improvements should be made in their scope and design before they or any others may be so widely used that it would become difficult to make a change. We want a set of standard apparatus of as appropriate a pattern as can be devised, for the sake of uniformity in the methods of measurement and facility in statistical comparisons. I have therefore brought all my instruments to this room, together with the attendants who had charge of them in the Exhibition, availing myself very gladly of the opportunity afforded by this meeting of submitting my method and appliances to discussion.

The number of persons measured in the laboratory from first to last was no less than 9,337, and each of them in 17 different ways. The only attendants were Serjeant Williams, who was permanently on duty, Mr. Gammage (optical instrument maker, 172, Brompton Road), who came for some hours every evening to assist and supervise, and who maintained the instruments in efficiency, and a doorkeeper provided by the executive, who admitted visitors, received the admission fee of 3*d.*, supplied the blank forms, and saw that the required particulars were written down by them. The doorkeeper also made himself useful in many other details. With this small staff, and in a compartment only 6 feet wide and 36 feet long, about ninety persons were measured daily in an elaborate manner.

It was not possible to work so rapidly at first, but the process gradually improved. Thus it was found best to take two persons through the laboratory together at the same time, and to keep parents and their children apart, as the old did not like to be outdone by the young, and insisted on repeated trials.

Hardly any trouble occurred with the visitors, though on some few occasions rough persons entered the laboratory who were apparently not altogether sober. On the whole, the laboratory worked with astonishing smoothness, and its popularity was extraordinary. Its door was thronged by applicants waiting patiently for their turn, or after a while turning away seeing that it was almost a hopeless task to wait. If there had been more accommodation there would have been a large increase in the number measured. The small admission fee of 3*d.* did more than cover every charge connected with the maintenance of the laboratory and I have therefore little doubt that a smaller number of careful measurements might be made periodically at

large schools under skilled supervision for a very minute charge per head, if the system of doing so was well methodised, and if the masters, older pupils, and school attendants gave willing help.

There is a vast field for work among the millions of school boys and girls of all degrees, with the object of keeping an adequate oversight upon their physical well-being by a judicious series of physical measurements. I do not see why it should be either difficult or costly to the schools of the upper and middle classes, to whom a charge of two or three pence per head is a matter of no moment whatever, to institute periodical measurements even of a somewhat elaborate character under skilful itinerant supervision, and to register them in a methodical and uniform manner. It should, I think, become a recognised part of school discipline to have this regularly done; the more so as the experience of this laboratory, confirmed by those of many American colleges, makes it certain that the innovation would be popular. One of the conditions that a standard set of instruments ought to fulfil is, that it should admit of being readily packed, carried about from place to place, and quickly set up anywhere for temporary use by a professional measurer.

We have now to consider what we should measure. One object is to ascertain what may be called the personal constants of mature life. This phrase must not be taken in too strict a sense, because there is nothing absolutely constant in a living body. Life is a condition of perpetual change. Men are about half an inch shorter when they go to bed than when they rise in the morning. Their weight is affected by diet and habit of life. All our so-called personal constants are really variables, though a large proportion of their actual variations may lie between narrow limits. Our first rule then is, that the trouble of measurement is best repaid when it is directed upon the least variable faculties.

There are many faculties that may be said to be potentially constant in adults though they are not developed, owing to want of exercise. After adequate practice, a limit of efficiency would in each case be attained, and this would be the personal constant; but it is obviously impossible to guess what that constant would be from the results of a single trial. No test professes to do more than show the efficiency of the faculty at the time it was applied, and many tests do even less than this, being so novel to the person experimented on that he is maladroit, and fails to do himself justice; consequently the results of earlier trials with ill-devised tests may differ considerably from those of later ones. The second rule then is, that the actions required by the tests should be as familiar as possible.

For example, in testing the delicacy of the various senses I think we should do wrong if we pursued the strict methods appropriate to psycho-physical investigations. We do not want to analyse how much of our power of discriminating between two objects is due to this, that, or the other of the many elementary perceptions called into action. It is the total result that chiefly interests us. Thus in measuring the delicacy with which a person can estimate the difference between weights, I think he ought to be allowed to handle them in the way he prefers and that we may disregard the fact that his judgment rests on a blend of many different data, such as pressure, muscular exertion, and appreciation of size.

There is some hope that we may in time learn to eliminate the effect of an unknown amount of previous practice by three or more distinct sets of trials. There exists a rough relation between practice and proficiency which ought to be apparent wherever progress is not due to acquiring a succession of new knacks, but proceeds regularly. When no practice has previously taken place, the progressive improvement will be very rapid; then its rate will smoothly decrease until it comes to an entire stop. I suspect that a curve might be drawn, representing the relation between proficiency and practice, and that the data afforded by at least three successive series of tests would roughly determine the position in the curve of the person who was being tested. They would show what he was capable of at the time, and approximately how much conscious or unconscious practice he had already gone through, and the maximum efficiency to which his faculty under test admitted of being educated.

An ideally perfect laboratory, whether a plain or an elaborate one, would admit of a stream of persons passing continuously through it. There would be no gaps and no blocks by the way, because the number of such instruments as might necessitate two, three, or more units of delay would be multiplied in that proportion. Again, there would be no waste of the attendant's time in idly watching examinees puzzling over tests that required a prolonged judgment, because those tests would be so contrived that the examinee might be left to himself until he had performed the specified act, after which the attendant would return and note the result. To exemplify what I mean, I will describe the test (Plate XII, fig. 2) for colour-sense by the use of wools, which is further explained on p. 215. A set of Holmgren's patterns were wound each through two holes in a separate rod, much as a net maker winds string on his netting needle, and each rod had a separate number stamped on it. A row of these rods were laid in any order side by side in a frame, with a long narrow flap above and below.

When the flaps were shut, the rods were nipped fast and their numbers were hid; when the lower flap was opened the numbers were exposed. The test consisted in telling the examinee that there were four tints of green, and he was required to point them out. Then the lower flap was opened, and the truth of his choice was tested by the correctness of the exposed numbers.

If this had been the process pure and simple, the test would have occupied an undue amount of the attendant's time, who would have had to stand by doing nothing while the examinee was hesitating. It is probable that two minutes might have been so wasted, in which case the ninety persons who daily required between them about thirteen hours of direct supervision in performing seventeen tests, would have required twice ninety minutes, or three hours, for this test alone. Such a sacrifice would have been inadmissible and it was easily avoided by a simple contrivance. Holes were bored below the bottom flap, one opposite to each rod, and four pegs were tied to the instrument. The attendant directed the examinee to put a peg into the hole opposite to each of the four greens, and then left him to ponder over his task at leisure, while he attended to others. After awhile the attendant returned, found the pegs set, and noted the result in a couple of seconds.

A similar plan was adopted in two instruments (Plate XIII, figs. 3 & 4) that I used, less for the intrinsic value of their results than as examples of the way in which a large class of tests might be methodised. They were to test the judgment of the eye in dividing a line into equal parts and in estimating squareness. The accuracy of the result was in each case measured by graduations that were hidden under a closed flap, while the examinee was left by himself to make the required adjustments. Here, again, the examiner returned after awhile, and noted the results of a prolonged pondering in a very few seconds.

On this principle very elaborate tests might be introduced into a well furnished laboratory without adding to the cost of the course by taking up the valuable time of a skilled supervisor, or of diminishing the rate at which applicants might be admitted. The stream of them would still pass regularly through, but the length of the stream included between the entrance and the exit doors would be longer.

It will be remembered that in the laboratory at the Exhibition, ninety persons passed through daily, and that the amount of skilled attendance given to them amounted in the aggregate to about thirteen hours: that is, seven minutes to each. But the time each person was occupied in the laboratory was fully twenty-one minutes, and often half-an-hour. In the first place, the persons to be tested were taken in pairs, that one explanation

and illustration might suffice for both, and since the promptest minded man of the two was usually the one who presented himself first, the less prompt man had the advantage of seeing his companion perform the test before he was called upon to do so himself. This duplex system changed the seven minutes into fourteen. Then there was the time occupied by each examinee in reading notices, writing down particulars of his age, state, occupation, and birth-place, in puzzling alone over set tasks, and in amusing himself by watching others.

I have dwelt at length on this because the necessity of labour-saving arrangements must be carefully borne in mind when devising a standard laboratory outfit, in which a large number of persons may be elaborately measured at a minimum of cost.

In the Appendix to this paper will be found a brief but sufficient description of the instruments used in the laboratory. I will now call attention only to those points which appear especially in need of criticism.

One omission in the laboratory has been noticed by many. I had decided, perhaps wrongly, after much hesitation, not to measure the head. My reason was, that the results would, under the peculiar circumstances of a mixed crowd of persons, each measured only once, be of little or no profit, and I feared it would be troublesome to perform on most women on account of their bonnets, and the bulk of their hair, and that it would lead to objections and difficulties. In the case of periodical measurements at schools, the head measurement would be of primary importance, and I should propose to take its maximum length and breadth with graduated calipers, and its maximum height above the plane that passes through the upper edges of the orbits and the orifices of the ears.¹

I measured the chief dimensions of the body, the weight and the breathing capacity, but could devise no good method, other than what these implicitly afford, of ascertaining the bulk, and its distribution in muscle or fat. Stripping was of course inadmissible, and measurements of girth, whether of body or limb, taken over the clothes, are rather fallacious. The excess due to the presence of the clothes, and supposing no wrinkles, is six times their thickness, taking the circumference of the limb as equal to six times its mean radius. The wrinkles add an unknown amount to the error.

For the first time such a thing has been attempted, I measured swiftness of blow as distinguished from force of blow, the latter

¹ I have designed and made the necessary instruments since this memoir was read. They are now being constructed solidly for me by the Scientific Instrument Company at Cambridge, and they will be in use at Cambridge in the beginning of 1885.

of which is a compound result of swiftness, weight, and knack. The instrument was based upon a very pretty principle first applied by Exner in his little apparatus for measuring reaction-time. It was a matter of surprise to myself, who was born in the days of pugilism, to find that the art of delivering a clean hit, straight from the shoulder, as required by this instrument, is nearly lost to the rising generation. My instrument (Plate XIII, fig. 5) consisted of a rod, padded at one end, and running quite freely between guides. The person to be tested was asked to hit the pad which fronted him, and to drive the bar forwards with as much swiftness as he could. The rate of progress of the rod was marked by a pencil attached to a vibrating spring that had been bent to one side and was retained by a catch to be set free by the moving rod. Notwithstanding the simplicity of the test, a large proportion of persons bungled absurdly over it. They could not or would not strike straight at the pad, but punched its side, and often broke the rod and hurt their knuckles. I had the deal rod replaced by an oaken one, and they still broke it and hurt their knuckles all the more. I then, in despair, reversed the action, by passing the looped end of a string round a catch (fig. 5a), forming part of an apparatus that was fixed to the opposite end of the rod, and I attached a stirrup to the other end of the string which the examinee held in his hand while he struck out into space, pulling the rod after him. While the rod was in motion, and before it was pulled home, the free end of the lever that retained the catch struck against a peg B in the frame of the apparatus; the catch was thereby released and the string (or rather the steel wire, which I used at last) was disengaged, and there was nothing left to break. On this plan all went well. This instrument has given beautifully accordant results in successive trials, but I propose to supersede it by another pattern, not yet quite complete in details, but primarily consisting of a light hoop turning round a horizontal axis, the string disengaging itself as it does from a humming-top.

I employed only a few tests for the delicacy of the various senses, but many others might be added with advantage to a fully equipped laboratory if they were constructed on the labour-saving principle I have described.

The construction of an absolute and convenient test for delicacy of hearing, quite baffles me. I mean an apparatus that any instrument maker might construct from description, every specimen of which should emit a sound always of the same loudness and quality. Identity in the striking bodies may be ensured by using coins, and the arrangement of two pennies (that is two short cylinders) striking crossways is theoretically perfect as ensuring that the locus of contact shall be a point. But the

trouble is to hold the pence firmly and conveniently by rods, too slight to increase the sound either by echoes or by their own vibrations caused by the concussion. The rods should nip the pence at their nodal points so as not to hinder the vibrations. I should be very grateful for useful suggestions.

The sickle-shaped hand instrument (Plate XII, fig. 1) used for reading small test type, first with one eye and then with the other, acted excellently, but the light in the laboratory was often bad. I used pages cut out of the shilling diamond edition of the Prayer Book, because it was easily accessible, and to enable persons who had been tested at the laboratory to repeat the identical experiment at home with their friends. But printed sentences, especially when they are so generally well known as those in the Prayer Book, are objectionable: a page of logarithms would be much better.

I exhibited, but did not use, a model of a test for delicacy of touch, so far as pressure is concerned, which has merits, but would I feared have occupied too much time. It is a "Roberval" balance, like a common letter weigher; the finger is laid on one scale pan, and the object of the instrument is to increase or diminish the weight in the other pan with perfect smoothness and at any desired rate. I effected this by placing a light cylindrical glass vessel, half filled with water, in the other scale pan, and suspended a broad plunger above it on the "Roberval" principle.

When the plunger was depressed, the water rose in the graduated glass cylinder, and the effect was exactly the same as if an equivalent amount of water had been poured in; conversely, the water sank when the plunger was raised. The action of the instrument seems perfect, but it exists as yet only as a working model.

A useful set of tests of judgment of absolute weights might be added, such as by requiring vessels to be filled with sand, till in the judgment of the examinee the one should weigh a pound, and the other an ounce, and then setting them in scales and recording the percentage of error. Similarly as regards absolute length, as by pulling out slides until they measured respectively a yard, a foot and an inch, and then opening a flap and displaying the test graduations in percentages of the yard, foot, and inch.

I will not take up time by describing other contrivances more or less promising that I have thought of but not actually used, and will now conclude by submitting the points on which I have dwelt to discussion, adding that I should also feel sincerely obliged by any helpful remarks that may be sent to me in writing

APPENDIX

(Chiefly extracted from the 1d. book sold by Authority at the Exhibition).

The object of the Anthropometric Laboratory is to show to the public the great simplicity of the instruments and method by which the chief physical characteristics may be measured and recorded. The instruments at present in action deal with Keenness of Sight; Colour-Sense; Judgment of Eye; Hearing; Highest Audible Note; Breathing Power; Strength of Pull and Squeeze; Swiftness of Blow; Span of Arms; Height, standing and sitting; and Weight.

Such is the ease of working the instruments that a person can be measured in all these respects, and a card containing the results furnished to him, while a duplicate is made and preserved for statistical purposes, at a total cost of 3d.

The use of periodical measurements is two-fold, personal and statistical. The one shows the progress of the individual; the other that of portions of the nation, or of the nation as a whole.

Description of the Laboratory.

A space 36 feet long by 6 feet wide is fenced off from the side of a gallery by open lattice work. It is entered by a door at one end, and is quitted by a second door at the other. The public can easily see through the lattice work, while they are prevented from crowding too close. A narrow table runs half-way down the side of the laboratory, on which the smaller instruments are placed. The measurements with the larger ones take place in the open space beyond the table.

The successive stations for the various operations lie in the following order:—

1. Desk at which the newly-entered person writes down certain data concerning himself.
2. Standard specimens for colour of eyes and hair.
3. Sight: (a) its keenness; (b) the colour-sense; (c) judgment of the eye in estimating length and squareness.
4. Hearing: (a) its keenness (scarcely practicable on account of the noise and echoes); (b) highest audible note.
5. Touch (exhibition of various apparatus).
6. Breathing capacity.
7. Swiftness of blow with fist.
8. Strength: (a) of pull; (b) of squeeze with right and with left hands.
9. Height: (a) when sitting, measured from the seat of the chair; (b) standing in shoes; (c) the thickness of the heel of the shoe.
10. Span of the arms.
11. Weight.

Process gone through.

1. THE DESK.—On payment of 3d. at the door, the applicant is admitted to the desk, and given a frame which contains a card, over which thin transfer paper is stretched. Carbonised paper is placed between them. Thus a duplicate copy of the entries is obtained, to be kept for statistical purposes. The card with the entries upon it is given to the person measured.

No names are asked for. The following plan is adopted to secure such data for the duplicate copy as are needful for its use as a statistical document, without annoying the applicant, who may be disinclined to parade his or her age, &c., on the card. The transfer paper is doubled over the back of the card, and no carbonized paper is put behind the flap; consequently what may be written upon it will not appear on the card. The particulars required on the flap are: Age last birthday; birthplace; state (married, unmarried, or widowed); residence, whether urban, suburban or country; occupation. All this takes place at the first station, which is partially curtained for the sake of privacy.

When these data have been written, the frame is turned over, and the other side is henceforth uppermost. On this the attendant marks the sex, and the applicant writes his initials or other distinguishing mark, to guard against any accidental interchange of the frames belonging to different persons who are simultaneously undergoing measurement.

At this same station is suspended a card, with specimens of wool of various shades of green worked upon it. Attention is directed to these specimens, that the applicant may clearly understand what will be required of him a few stations on, when his colour-sense is tested by his being asked to pick out all the green shades from among many wools of different colour. It is important that he should appreciate the wide variety of shades that are used, otherwise he may fail in the test, owing to a misunderstanding of what he is wanted to do.

2. COLOUR OF EYES AND HAIR.—Artificial eyes of standard colours are exhibited, together with the following descriptive names—dark-blue, blue, grey, dark-grey, brown-grey, (green, light hazel), brown, dark-brown, black. The attendant will note the colour of the eyes, but no entry will be made regarding the colour of the hair, for the reason that with the darkening effects of pomades, and of dyes, and the misleading appearances of false hair, no useful results could be arrived at. However, for the convenience of the visitor, samples of standard colour of hair are exhibited, and the names are attached by which the chief varieties of colour are usually described. They are flaxen, light-brown, brown, dark-brown, fair red (golden), red, dark red (chestnut auburn), black.

3. SIGHT.—(a) *Keenness of Eye-sight* is measured by the greatest distance at which the small print known as "diamond" type can be read.

The eyes are tested separately, as it often occurs that they differ

considerably in efficiency without the person being aware of the fact, who ought in that case to use appropriate glasses.

The apparatus (Plate XII, fig. 1) is a long and light frame with a single eye-hole. Blocks of wood about $1\frac{1}{4}$ inch wide and $2\frac{1}{2}$ inches high, each with a sentence in diamond print pasted upon its face, are fastened square to the line of sight at distances of 7, 9, 11, and so on up to 41 inches. The number of inches is painted in bold figures on the upper part of the face of each block. The blocks are disposed in a curve, so that when viewed from the eye-hole each stands just clear of the preceding one (see fig. 1a); the curve of the frame is, in fact, an equiangular spiral. First the right eye is tested, and then the left eye, and the greatest distance at which the type can be read by each of them is recorded. If the print cannot be read at all by the unaided eye, a cross is marked on the schedule.

b. Colour-Sense.—A series of bars are packed closely side by side in a frame, looking something like the keys of a pianoforte. Fig. 2, Plate XII, shows only a portion of the instrument, as the right hand part has been broken off in order to exhibit its construction more distinctly. The two flaps are half opened for the same reason. When the upper flap is closed, the part B keeps the bars in an even row, and the part C nips their tops. When the lower flap is closed, the numbers on the bars are hidden. Along the middle part of each of these bars a differently coloured wool is wound lengthways, and the foot of each bar is stamped with a separate number. In the frame there are as many peg-holes as there are bars, one hole to each bar. The order of the bars can be changed when the instrument is unlocked. The frame is placed before the person to be tested, the numbers are hidden by the flap A, and he is required to insert a peg opposite each of the bars that has any shade of green wound round it. After he has leisurely done this to his satisfaction the attendant lifts up the flap and displays the numbers of the chosen colours, and records the fact of his having judged rightly or wrongly as the case may be.

c. Judgment of Eye as regards Length.—A board (Plate XIII, fig. 3) has two pairs of parallel strips of wood fastened across it, between each of which a bar slides freely. In each case a square rod, 15 inches long and somewhat longer than the bar, is hinged to it along its edges, and when closed down upon it, hides it altogether. There is a movable pointer attached to the lower of each pair of strips. The position of the pointers is shown in the figure, but the scale of the drawing is too small to show the slot and the rest of the easily-to-be-imagined arrangement by which they are rendered movable. In the one pair, the pointer is set somewhere about midway, and the person to be tested is desired to slide the rod until its middle is brought as nearly as he can judge opposite the pointer. When he has done this, the hinged rod is lifted and the face of the bar is exposed. This has a central fiducial mark, and bears graduations on either side of it each equal to $\frac{1}{100}$ of the total length of the rod. The error of adjustment is thus determined in percentage.

The second rod has to be set so that the pointer shall correspond to one-third of its length, and the error of adjustment is similarly read off in units, each equal to a hundredth part of the total length of the rod.

As regards Squareness.—A board (Plate XIII, fig. 4), including a sector of a circle, has an arm movable about the centre of the circle, while a broad flap of which the last part is supposed in the figure to have been broken off, hides its free ends. A black line AB is drawn across the board. The person tested is desired to set the arm as squarely as he can to the black line. When he has done this, the attendant lifts the flap and exposes a scale of degrees graduated on the foot of the board, and reads off the error of the setting of the arm in degrees.

HEARING.—(a) *Its Keenness.*—Some apparatus is exhibited by which at least the relative acuteness of hearing can be tested; but it will not be used, as the noises and echoes of the building render such determinations untrustworthy.

(b) *Highest audible Note.*—An india-rubber tube communicates through 5 others with 5 fixed whistles of small bore, and of depths that will give 50, 40, 30, 20, and 10 thousand air vibrations in a second respectively—that is, of the several depths of 0·067, 0·084, 0·113, 0·169, and 0·380 inch. Each tube is nipped by a separate clamp. These are numbered in order, 5, 4, 3, 2, 1, and serve as keys. When any one of them is depressed, air is blown through the corresponding whistle, and is thrown into vibrations which can be heard by some as a shrill and pure note, while others hear merely a puff or nothing at all. Every person has his limits of power of hearing high notes, quite independently of the general acuteness of his hearing. The test lies in ascertaining which is the shrillest of the five notes that is audible. The precise limit of audible sound may be found by using a whistle that has a movable plug for its base. The larger of the small whistles are made by Messrs. Tisley & Co., 172, Brompton Road; the smaller and more delicate ones are made by Mr. Hawkesley, 357, Oxford Street.

TOUCH, &c.—Several instruments are exhibited, but it is not proposed to test with them, as the requisite time cannot be spared.

BREATHING CAPACITY.—A spirometer is used, made by a counterpoised vessel suspended in water. When the air is breathed into it through a tube, the vessel rises, and the scale at its side shows the number of cubic inches of displacement. The person to be tested fills his chest and expires deeply three or four times for practice, then, after a few seconds' rest, he tries the spirometer. Spirometers are usually furnished with a stop-cock to the breathing tube, which is intended to be closed when the expiration has ceased. An inverted glass siphon with a little water in it is connected with the breathing tube beyond the stop-cock. If the water does not stand at the same level in the two arms of the siphon it would show that the air in the spirometer was somewhat compressed or dilated as the case might be, and the air cylinder would have to be slightly adjusted before reading off. However, the error caused by neglect-

ing this manometer rarely exceeds 4 cubic inches, and may be disregarded.

SWIFTNESS OF BLOW.—A flat bar (Plate XIII, fig. 5) with a pad, P, at one end runs freely between guides. The blow is delivered with the fist straight at the pad, driving the rod nearly or quite home, or else the blow is converted into a pull by holding a stirrup attached to a string, and striking out into space. The stirrup is attached to a string or, better, to a piece of steel pianoforte wire which is looped round a catch that forms part of a little apparatus attached to the bar, and which is shown enlarged in fig. 5a. When the bar is in full motion the catch releases the string or wire, so that there is nothing to break. The swiftness of the motion of the bar is registered as follows:—Across its path a bridge is fixed and a flat steel rod projects from the bridge, lying above the bar and parallel to it. Its free end points in the same direction as that towards which the bar is driven by the fist. When the bar is set back ready for use, an arm, A, turning round a pin fixed in the framework is set so as to push the spring forcibly to one side, but as soon as the bar begins to move, a stud that is fixed to the bar strikes the arm from before it, and so releases the spring, which thereupon vibrates transversely to the moving bar. A pencil is attached to the spring, and the upper face of the bar carries a strip of the prepared cardboard used for white flexible slates. The pencil leaves a sinuous trace on the strip as shown in the lower figure, and the points where the trace crosses its own median line can be measured with precision. The spring that is used makes twenty-five complete vibrations in a second. Hence, if the interval between any two alternate crossing-points is 0·48 inch in length, the bar is travelling 1 foot per second. A scale is constructed of which the unit is 0·48 of an inch, and the graduations upon it are in feet per second. By applying this scale to the curve, the swiftness of the corresponding blow is immediately read off.

STRENGTH (a) of pull.—The well-known instrument with a spring, dial, and pointer, made by Salter, is held as an archer holds his bow when in the act of drawing it, and the strength of the pull is given by the index.

(b) *Of squeeze.*—The instrument, also made by Salter, is tried first in the right hand, secondly, in the left hand.

SPAN OF ARMS.—A pair of rods, sliding over each other and with projections at either end, is held so that the tips of the fingers press against those projections; then the arms are extended to their full stretch. The graduations show the span.

HEIGHT (a) above seat of chair.—A quickly acting measuring-rod is fastened upright to the back of a solid and narrow chair.

(b) *Standing in shoes.*—This is taken by a measuring-rod fixed against the wall.

(c) The thickness of the heel of the shoe is measured.

Lastly c is subtracted from b, which gives—

(d) The height without shoes.

WEIGHT.—A simple commercial balance is used, as cheaper, more

accurate, and much more capable of bearing hard usage than the lever balances. Its sole disadvantage lies in the necessity of handling heavy weights during its use. Overcoats should be taken off, the weight required being that of ordinary indoor clothing.

Most of the instruments in use at the laboratory are wholly or in large part of my own designing. Those that are not are the spirometer, the instruments for testing strength of pull and of squeeze, and the weighing machine.

On the opposite page is a *fac simile* of the Schedule which was retained at the Anthropometric Laboratory. The card that was presented to each person examined was a duplicate of all the entries in the Schedule, except those printed crosswise at the right hand side.

Explanation of Plates XII and XIII.

(For description, see both the Memoir and the Appendix to it.)

- Fig. 1. Instrument for testing keenness of sight.
,, 1a. Diagram showing how each of the blocks appears to stand just free of the preceding one when they are viewed through the eye-hole.
,, 2. Part of the apparatus for testing colour-sense by various samples of coloured wools. The right hand portion is supposed to be broken off.
,, 3. Apparatus for testing the accuracy of the judgment of the eye, in dividing a rod into two, and into three equal parts.
,, 4. Apparatus for testing the judgment of the eye as regards squareness. The left hand portion of a flap that conceals graduations is supposed to be broken off.
,, 5. Apparatus for testing swiftness of blow or pull.
,, 5a. Shows the mechanism of a self-acting catch, which releases the string by which the rod is pulled just before the rod comes home.

INTERNATIONAL HEALTH EXHIBITION, 1884.

ANTHROPOMETRIC LABORATORY,
Arranged by Francis Galton, F.R.S.

at the late International Health Exhibition.

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Sex	Colour of eyes	Date	Initials
	EYESIGHT.		
Greatest distance in inches, of reading “Diamond” type	right eye left eye	of blow of hand in feet per second }	SWIFTNESS
Colour-sense, good- ness of		of squeeze in lbs. of right hand left , ,	STRENGTH of pull in lbs. }
	JUDGMENT OF EYE.		SPAN OF ARMS
Error per cent. in dividing a line of 15 inches	in three parts	From finger tips of opposite hands }	feet, feet,
Error in degrees of estimating squareness		Sitting, measured from seat of chair }	HEIGHT feet, inches.
	HEARING.		
	Keenness can hardly be tested here owing to the noises and echoes.	Standing in shoes less height of heel.....	feet, inches.
Highest tone audible }	between	0'000 vibrations and 0'000 per second.	Height without shoes feet, inches.
	BREATHING POWER.		WEIGHT
Greatest expiration in cubic inches		ordinary in-door clothing in lbs. }	

Age last birthday?

Married or unmarried?

Birthplace?

Occupation?

Residence in town, suburb, or country?

DISCUSSION.

MR. C. ROBERTS remarked that Mr. Galton had invited the meeting to examine, criticise, and suggest such alterations as they might think desirable in the anthropometric apparatus he had set before them; but his ingenuity in the preparation of instruments of this kind was so well known that there was little room for criticism. He had, however, confessed that he had not yet been able to devise a satisfactory instrument for testing the sense of hearing, and Mr. Roberts would therefore venture to direct his attention to a little instrument sometimes used for testing the hearing of idiots, which could, he thought, in Mr. Galton's hands, be made a useful and trustworthy test. It consisted of a series of slips of very different materials, such as wood, slate, metal, &c., suspended from a bar, and used like a set of gongs. For taking the diameters of the head in a ready way, which was also a subject on which Mr. Galton asked for suggestions, the speaker had always employed a pair of wooden callipers of his own design, which answered very well; but he wished Mr. Galton would direct his attention to devising a simple form of the instrument employed by hatters for gauging the heads of their customers. With regard to some of the apparatus before the meeting, he feared that the results obtained by the very ingenious contrivances for testing the sense of weight, the sense of touch, and the capacity for determining the perpendicularity, or the division of an object, were tests of education of certain faculties, and he should expect to find a post office clerk or grocer to have a finer appreciation of weight than any one less accustomed to the handling of weights. The test for colour-blindness was hardly sufficient. It was Holmgren's light green test, which proved no more than that there was some defect of the colour-sense, but which might not amount to actual colour-blindness. The purple test could easily be arranged in the same apparatus. Purple holds the unique position of appearing blue to the red-blind, grey to the green-blind, and red to the violet-blind, and is employed as a test for all these kinds of colour-blindness. Mr. Galton had asked the speaker to explain the models for determining the colour of their eyes. The classification was made on simple anatomical grounds, and two great classes were formed dependent on the presence or absence of a layer of pigment in *front* of the iris. When this layer of pigment is present we have the whole series of *dark* eyes, varying from light brown to what is commonly called black; and when it is absent we have the series of blue and grey eyes, which result from the black pigment on the *inner* surface of the iris, showing through, with greater or less distinctness, the semi-transparent structures of the iris itself. In conclusion, Mr. Roberts observed that he should look forward to the results of the observations made in the Anthropometric Laboratory at South Kensington with great interest; and expressed his great satisfaction at the prospect which Mr. Galton

held out, that the Laboratory was likely to be established in a permanent form.

Mr. R. MELDOLA asked, with reference to the instruments for measuring the focal lengths of the eyes, whether Mr. Galton had not found it necessary to take two readings for each person, one for the right eye and the other for the left eye. He asked this question because a large number of people differed in the focal lengths of their two eyes, often to the extent of several inches, he himself being a case in point.

Miss HENRIETTA MUELLER, Mr. R. B. MARTIN, Mr. G. GRIFFITH, M. BERTIN, Mr. E. W. STREETER, Dr. GARSON, Mr. G. M. ATKINSON, Mr. BLOXAM, Prof. THANE, Dr. W. H. COFFIN, and the PRESIDENT also joined in the discussion.

Mr. GALTON, in reply, said that the method suggested by Mr. Meldola had always been adopted, and that the statistics led to the interesting result that there was no preponderating number showing that one eye had a general tendency to be longer-sighted than the other. In fact, the statistical records for the two eyes were exactly equal.

NOVEMBER 25TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

- From ADMIRAL F. S. TREMLETT.—*Les Alignements de Kermario.*
By James Miln.
- From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE.—Correspondenz Blatt. September, 1884.
- From the BERLINER GESELLSCHAFT FÜR ANTHROPOLOGIE.—Zeitschrift für Ethnologie. 1884. Heft. 4.
- From the SOCIETÀ ITALIANA DI ANTROPOLOGIA.—Archivio per l'Antropologia e la Etnologia. Vol. XIV, Fas. 2.
- From the AUTHOR.—Über die Zahl der Zähne bei den Hasenschar-tenkiefer-spalten. By Prof. Dr. Paul Albrecht.
— Ueber die Morphologische Bedeutung der Kiefer-, Lippen-, und Gesichts-spalten. By Prof. Dr. Paul Albrecht.
— Der Zwischenkieferknochen und seine Beziehungen zur Hasenscharte und zur schrägen Gesichtsspalte. By Prof. Dr. Paul Albrecht.

- From the AUTHOR.**—Sur les Éléments Morphologiques Manubrium du sternum chez les Mammifères. By Prof. Dr. Paul Albrecht.
 — Sur les Homodynamies qui existent entre la main et le pied des Mammifères. By Prof. Dr. Paul Albrecht.
 — Ein neuer Fundort von Nephrit in Asien. By Dr. A. B. Meyer.
From the EDITOR.—Matériaux pour l'Histoire de l'Homme. November, 1884.
 — The Illustrated Science Monthly. November, 1884.
 — "Nature." Nos. 785, 786.
 — "Science." Nos. 91, 92.
 — Revue Scientifique. Tom. XXXIV, Nos. 19–21.
 — Revue Politique. Tom. XXXIV, Nos. 19–21.
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The election of the following new members was announced:—

WALTER HURST, Esq., and THOMAS WILSON, Esq.

Dr. J. G. GARSON exhibited a prehistoric skull and some long bones from the Island of Antiparos.

Mr. WALTER COFFIN exhibited a cast of the mouth of a hairy boy from Russia, showing abnormal dentition.

The following paper was read by the author:—

FACTS suggestive of PREHISTORIC INTERCOURSE between EAST and WEST. By ANNE WALBANK BUCKLAND.

THE meeting of the British Association on American soil, and the increased importance accorded to the science of Anthropology at that meeting, suggested to me the desirability of endeavouring to gather together such broken threads as might help us to a knowledge respecting that early prehistoric intercourse, which most anthropologists believe *must* have taken place between the two hemispheres, although the date and the route of such intercommunication remain unknown.

Dr. Wilson, in treating of this subject, points out three probable routes of migration from the eastern to the western hemisphere: 1, through the Isles of the Pacific to South America; 2, an Atlantic Oceanic migration, *via* the Canaries, Madeira, and Azores, to the Antilles and Central America, and probably by the Cape Verdes to Brazil; and 3, *via* Behring's Strait and the North Pacific Islands to the Mexican Plateau. But he adds: "The more obvious traces rather indicate the same current which set from Southern Asia to the Pacific

shores of South America, moving onward till it overflowed by Behrings Strait and the Aleutian Isles, into the continent from whence it was originally derived."¹

It is obvious that as all these migrations necessitate a sea voyage of considerable length, they could only have been undertaken by peoples having some knowledge of the art of navigation; it is therefore desirable, in the first place, to ascertain how far the native vessels of the American continent support the theory of Professor Wilson.

Taking the very interesting and instructive paper of General Pitt Rivers on "Early Modes of Navigation"² as our guide, we find on the American continent, first, the dug-out canoe, the earliest and simplest of all boats, the distribution of which is almost universal, and which probably played an important part in the very earliest migrations of the human race, enabling them to cross rivers and narrow seas; but we find that the Waraus of Guiana, and the Ahls of North America, fashion their canoes after the Birmese model, whilst the Fuegians, otherwise so low in the scale of civilisation, sew planks together with thongs of raw hide, after the fashion of those in use in Africa and the Polynesian Islands. In California we see the papyrus float of Egypt; but the outrigger, so much used in the Pacific, does not appear to have found its way to America, although the *Buccina*, or shell trumpet, used on board the canoes of the Pacific, and known also in ancient Rome, is used in Peru. Rafts, like the Madras catamaran, were in use in Peru at the time of the conquest, and carried sails; one of these vessels having been met far out at sea, conveying both men and women, with provisions and articles of commerce, to the great astonishment of the Spaniards, who had never before seen sails used on the American continent. From this slight sketch it will be seen that the art of navigation had made some advance on the American continent before the Spanish conquest, and that the forms of the vessels used can be traced to various parts of the world, although the absence of the outrigger, and the general absence of sails, would seem to show that whatever connection there might have been with Asia and the Polynesian Islands must have ceased before the invention of those two important improvements in primitive navigation.

Turning from navigation to the implements and utensils in use among the American nations before the conquest, we are again met by the fact that their congeners may be traced to many parts of the world. It would be impossible to point out

¹ "Prehistoric Man," D. Wilson, p. 384.

² See "Early Modes of Navigation," Colonel Lane Fox ("Journ. Anthropol. Inst.", April, 1875).

all these, but I may note one or two weapons which, from their peculiar shape, have struck me as particularly useful by way of comparison. And first, an axe-head, probably of metal, which seems to have been regarded as sacred. This axe, called *champi*, with a handle more than a cubit in length, was given to princes on the occasion of their initiation into manhood, as a mark of honour. It is described in the Royal Commentaries thus: "The metal part had a blade on one side, and a sharp point on the other." This probably represents the *wedge* of gold said to have been carried by Manco Capac, and which sunk into the earth at Cuzco.

In the remarkable rock-sculptures in the Yonan Pass, Peru, copied in Hutchinson's "Two Years in Peru," we find a rudely designed figure bearing this axe with a long handle, and having the head adorned with an axe-blade of a similar shape: this was probably an emblem of authority, for we find this same axe-blade attached to the helmet of the curious and unique figure pourtrayed on a vase found near Trujillo, Peru, which Bollaert looks upon as representing the god of war, and which certainly has a strong affinity with Hanuman, the monkey-god of India. Bollaert also points out the similarity between the vase bearing this figure and those of Etruria, and further remarks that the flying insect resembles a figure on the Athenian vase of Electra at the tomb of Agamemnon.¹ To this I would add that there is a remarkable resemblance between the ornaments round the girdle of this figure, and those singular Chinese or Japanese ornaments, called *magatamas*.

This axe-head appears again as an ornament on the head of the Mexican god of hell (*Micantecutli*), and it is also worthy of remark that the same squareness of face, and the pointed ornaments surrounding the faces, which apparently represent the sun-god in the Yonan Pass sculptures, and which appear so prominently in the figure on the great central gateway of Tiahuanaco, are seen in this Mexican figure.² I have not been able to trace this axe-head ornament in Egyptian, Greek, or Etruscan sculptures, although it appears to me that the ornament on the Greek helmets which holds the plume, may have been derived from it; in fact, on some of the vases the form seems well defined. Two bronzes in the British Museum, labelled "Parts of Assyrian Helmets," are of precisely the Peruvian form, and it appears also on two horses among the Assyrian sculptures.³ It is seen, however, on some of the monuments from Halicarnassus now in the British Museum, and on the Hercules from the same place,

¹ "Antiquities, &c., of South America," Wm. Bollaert, F.R.G.S., p. 203.

² See Smithsonian Contributions, 1879-80.

The horses bearing this ornament are said to be foreign.

and is figured by Wilkinson as forming an ornament on the Persian horses, whilst the axe from which this ornament seems to have been derived appears in India in the Hamath hieroglyphics, and there seems to be an approximation to the form in Egypt. The Esquimaux have also a copper implement of the same form, and it is represented in New Guinea in a betel-spoon of carved wood.

Another axe, figured frequently in the Mexican paintings, bears a strong affinity to those still in use on the West Coast of Africa.

A still more curious weapon called the *mahuahuitl*, very frequent in the Mexican paintings, and which consists of several blades of obsidian inserted in a wooden handle, appears to be represented among the sculptures of Southern Peru; it somewhat resembles the Egyptian hieroglyph known as the emblem of stability, and its nearest affinities seem to be a wooden club in use in New Guinea, and the shark's-tooth sword or spear of the Philippines.

The strong resemblance between the pottery of Peru and that discovered by Dr. Schliemann at Hissarlik, cannot fail to strike every one, and has been very frequently remarked upon by antiquaries; but it is singular to find the figure which occurs so frequently on the Hissarlik vases appearing *reversed*, on vessels apparently sacred, in the Mexican paintings; whilst the Mexican form of the same symbol is found among the rock-sculptures of Scotland, in conjunction with the T seen frequently in the hieroglyphs of Palenque. Nor is this the sole example of similarity between the symbolic sculpturings of America and Scotland. To say nothing of crosses and circles with and without centres, which are plentiful in almost every part of the world in which rock-sculptures are found, we may point out that the figure designated a *boar*, which is seen on the Scotch monuments, resembles much more nearly the American *tapir*, than a similar figure usually called an *elephant* resembles that animal. In both cases the design would appear to be drawn from memory or description, and is therefore far inferior to the horse and the bull on the same monuments. There is a figure occurring frequently among the Scottish and British sculptured stones which has been designated the *incomplete circle*; it consists of a series of concentric rings with a dot in the centre, from which proceeds a line leading through and beyond the circles in various directions. This form is figured in Mr. Markham's translation of the Royal Commentaries, where it is thus described: "The army reached the town of Tumpampa, where the Inca ordered water to be brought from a river by boring through a mountain, and making the channel enter the city by curves in

this way." Cup-markings, so common in Europe, are also to be found in Peru; but two still more remarkable similitudes must not be omitted before quitting this part of our subject.

Among the most hideous of American sculptures are the gigantic figures of Pensacola, represented with protruding tongue, and this symbol of the protruding tongue, generally accompanied by immense fangs, seems to range in ancient American sculptures from Mexico and Central America to Peru. Dr. Wilson gives a modern example of this symbol, the work of the Tawatin Indians, and it may be seen in a curious figure from a Peruvian vase. In Mexico this protruding tongue was a symbol of Quetzalcoatl. The same symbol appears on some of the early coins of Europe,¹ and is one of the characteristics of the god Bes in Egypt, and of the Gorgon of Etruria. Another still more curious resemblance between the sculpturings of the East and West is found in the winged globe so well known in Egyptian, Assyrian, and Persian sculptures. The American example of this mythological emblem is drawn in Stephens's "Central America and Yucatan," having been found by him among the ruins of Ocosingo. These ruins are pyramidal structures, over the door of one of which appears this ornament in stucco. Stephens describes it thus: "The wings are reversed, there is a fragment of a circular ornament, which may have been intended for a globe, but there are no remains of serpents entwining it." On comparing the figure of this ornament from Stephens's book with the Egyptian form, I believe no one will doubt that, notwithstanding the reversed position, the two are substantially the same. Nor do I think this is the only example of this very suggestive form, for in the elaborate paper by Mr. Holden in the "Smithsonian Contributions," on "Studies in Central American Picture-writing," a view is given of the exterior of the Adoratorio at Palenque, and there, over the door, is a fragment of a stucco ornament strongly suggestive of a similar device. The reversal of the figure is worthy of remark, because it seems to be common not only in America, for Mr. Park Harrison has observed the same in the Phoenician alphabet discovered in Sumatra.

I have already pointed out this peculiarity with regard to the ornament on the Mexican vases as compared with those of Hissarlik, and believe the same may be applied to some of the hieroglyphic figures on the rocks of the Yonan Pass, Peru, already noticed; these hieroglyphs strongly resemble letters, but, according to the Phoenician alphabet, appear to be upside down. This, however, does not apply to one figure, which appears to be an ordinary Chinese letter. The most probable

¹ As, for example, at Populonia and Parium in Mysia.

reason for the observed reversal of letters and figures appears to me to be that they have been engraved either from memory or by workmen ignorant of their signification, who, receiving their pattern, applied it according to their own ideas, or by transfer.

Many more examples of the identity of the symbols employed in America and the eastern hemisphere might be adduced, as, for example, a curious form which might have been the origin of the *arms* of the Isle of Man, and which appears prominently in the rock carvings of both hemispheres. Then there is the cross, both in its simple form and the more elaborated Maltese and *Swastika* patterns ; the T also appears very frequently ; but these have already been learnedly discussed by various ethnologists and antiquaries, and my object in this paper is rather to bring forward less known forms and facts, for which reason I also omit all reference to the serpent, in its apparently identical significance in the Old World and the New, which subject I have already treated at some length in a paper on "The First Metallurgists," contributed to the *Westminster Review* for January, 1875. But there is one figure which occurs very frequently among the Mexican paintings, of a bird with a female head, which so strongly resembles the harpy or siren of Greece and Rome that it must not be passed over in silence. Again, the *extended hand*, so prominent in the sculptures of Central America, and so common both in the rude rock-sculpturings and paintings of savages all over the world, and which appears in several forms identical with those of Mexico and Central America, in the Hamath hieroglyphics (which hieroglyphs seem to me to bear the strongest resemblance of any to those of Mexico and Palenque), has a symbolism, perhaps not wholly understood as yet, but which the researches of Mr. Garrick Mallery into the "Sign Language of the North American Indians" bid fair to unravel.

If we turn from forms and symbols to the great prehistoric monuments of the two hemispheres, we shall find a still more striking resemblance.

The likeness between the Pyramids of Mexico and those of Egypt and Assyria has frequently been pointed out, as also that between the great Serpent Mound of Ohio and our own Avebury ; but that which is less generally recognised is the existence of stone circles and dolmens in Peru, with legends attached to the former entirely corresponding with those in Cornwall, where, as is well known, these stone circles are known as *dance maidens*, the legend being that they were heathen dancers turned into stone for disobedience to a Christian missionary, but which believers in the solar myth look upon as a corruption from *Dawns maen*, significant of solar worship. The

similar legend attaching to the Peruvian circles I give in the words of Salcamayhua, as translated by Mr. Markham. After giving a legend resembling that of St. Thomas, in which Tonapa crosses the lake on his outstretched mantle, he adds: "They say that the people of that town (Tiyahuanacu) were engaged in drinking and dancing when Tonapa came to preach to them, and they did not listen to him. Then, out of pure anger, he denounced them in the language of the land; and when he departed from that place all the people who were dancing were turned into stones, and they may be seen to this day."

I know of only one dolmen, described by Hutchinson,¹ but others doubtless exist, and it is not a little singular to find Quetzalcoatl in Mexico credited with the erection of a rocking stone, like those attributed to the Druids in Cornwall. Bancroft says (vol. iii, page 254), "Some say that Quetzalcoatl built certain subterranean houses called *mitlancalco*; and further, that he set up and balanced a great stone, so that one could move it with one's little finger, yet a multitude could not displace it." In like manner the second of the Peruvian Incas is credited with having made his soldiers erect cairns or stone heaps called *usuns*, "every passer-by must bring a stone and throw it and their *coca* pellets on the heap as they passed."² Of the Cyclopean architecture of the Peruvians and builders of the gigantic ruins of Central America I have not space to speak, but must point out their strong analogy with the remains of Egypt, the tombs of Mycenae and Etruria, and also with some of the gigantic mounds of Ireland, especially with regard to the form of the doorways, and the method of forming the roof of overlapping stones. All these things, however, have been pointed out by many writers, the general conclusion arrived at being that these ruins are extremely ancient, and of indigenous origin in their several centres, notwithstanding the casual resemblance to Egyptian, European, and Asiatic art, apparent in most of them.³

But of all the monuments of prehistoric America, the great earth mounds of Ohio and the Mississippi are perhaps the most remarkable; gigantic earthworks representing various animal

¹ "Two Years in Peru."

² Markham: "Rites and Laws of the Incas," p. 76.

³ Since writing this paper I have received "*The Californian Architect and Building News*," containing an account of the Mexican Pyramids, in which the author puts forward an idea which, if it should be verified, would go far not only to connect these pyramids with those of Egypt, but also to give an approximate date for their construction. He says: "There is, however, this remarkable circumstance in the situation of the pyramids, that the line joining the centres of both, follows within two degrees a true north and south line. The little discrepancy may be accounted for by the supposition that they were aligned by some star near the Pole at the time of their construction, probably Alpha Draconis, but not Polaris, as, erroneously, Almaraz says."

forms, circles, squares, and oblongs, designed apparently to serve some great mythological purpose, and to perpetuate some religious mystery. They have been divided into sepulchral mounds, sacrificial mounds, and mounds of observation; but in any case they seem to have been constructed by a race of sun-worshippers, and to bear a decided analogy with the erections of the early sun and serpent worshippers of the Old World. That the mound builders came originally from a more southern latitude seems proved by the sculptures of animals not found in North America, and I would call especial attention to three mounds figured in the "Journal of the Anthropological Institute," as seeming to bear particularly upon the religious systems both of Peru and Asia. In these three mounds we find an oblong figure between a greater and a lesser circle, representing, as I believe, the mundane egg between the sun and the moon, as hung in Peruvian temples, and in those of Egypt and Assyria. In Peru the mundane egg appears to have been signified by the plate of fine gold described by Salcamayhua as signifying "that there was a Creator of heaven and earth."

It is, however, when we come to burial customs that we are struck by the great variety in use on the American continent, and their identity with those in other parts of the world, extending even to those small details which would not seem likely to have arisen spontaneously in the minds of people wholly separated. The use of masks, which prevailed so largely on the American continent, as well as in Egypt, Greece, and Etruria, may be noticed as one of these peculiarities; another is the cording of the body, so as to keep it in that doubled-up position so universally adopted in very ancient times, and which is not only seen in Peruvian mummies, but is figured in Mexican paintings, and is still practised in Australia and in the Aleutian Islands, as well as among some tribes of North American Indians. Then there is tree-burial, also used in Australia, North Asia, and North America. But all these different modes of burial, and their several affinities, have been so elaborately and learnedly treated by Dr. H. C. Yarrow, in the volumes of the Smithsonian Institution, that I must refer my hearers to those most instructive papers for details, and only notice two or three peculiarities which have especially struck me. And first I would call attention to a remark of Consul Hutchinson, in his "Two Years in Peru," in which he notices the occurrence of a square opening at the base of some of the tombs. He says: "Amongst the ruins (of Parará) is one burial-place, 24 feet long and 18 feet wide, divided into three compartments cross-wise, with walls of 18 inches thick intervening. At the corner of each of these dividing walls, down at the base, there is a small aperture of about

8 inches square, the object of which it is impossible to guess at, unless it were intended to allow the spirits of the dead to hold communion with one another.”¹ This opening, usually of a round form, is found not only in India, but very frequently in dolmens in Great Britain, France, and I think in other parts of Europe; whilst the square form is found in Cyprus and Sardinia. It is connected, as I believe, with another singular custom also found to prevail in Peru, that is *trepanning*, several instances of which are recorded as having been found in graves in Peru, but the following extract would seem to extend the practice to the mounds of Illinois:—“One of the skulls presented a circular opening about the size of a silver dime. This perforation had been made during life, for the edges had commenced to cicatrize.”² There would also appear to be recorded one case of that incomplete trepanning noticed by Broca, in a skull found in Winnebago county, Wisconsin, which is thus described: “On its summit, an inch from the coronal suture, and $\frac{1}{2}$ inch to the left of the sagittal suture, is a remarkable circular depression, an inch in diameter. It shows no signs of fracture or violence, and the inside of the skull shows no corresponding elevation. What could have occasioned this thinning of the bone we cannot tell; we only know that it must have been done long before the death of its owner, for the wound, or whatever it is, is perfectly healed, and the bone in the depression is as smooth and of the same sort as the remainder of the skull.”² This appears to me to correspond with that which was shown to me by the late Dr. Broca as an example of incomplete trepanning, which he looked upon in the light of a survival from the older form, in which the perforation was complete; the reason for the perforation in the skull, and the holes in the graves being the same, that is to allow free exit to the spirit. This I have endeavoured to make clear in a paper entitled, “Surgery and Superstition in Neolithic Times,” published in the “Journal of the Anthropological Institute” for November, 1881. The extension of this singular practice, found in skulls of *Neolithic* age in Europe, to America, I consider to be a very important ethnological fact; and it is not a little noteworthy that, in one case at least, in Peru, the perforation is *square*, corresponding with the holes in the graves. In fact, the squareness of form which seems to prevail in America is a subject for inquiry, for it would appear to have a religious meaning, and would probably give a clue to the god to whom certain buildings were dedicated. In Europe I believe the square was sacred to gods of Hell, or the Under-World, but the same idea is not equally well defined in America,

¹ “Two Years in Peru,” vol. ii, p. 49.

² “Mortuary Customs,” Smithsonian Contributions, 1879–80, p. 118.

where the squareness appears to be extended to the sun-god ; but the Peruvian figure may perhaps denote the moon.

Another curious fact revealed in the graves, especially of Peru, is the practice of distortion of the head in infancy. There is a legend relating to this given by Salcamayhua, to the effect that it was ordained by one of the Incas : "This Inca ordered the heads of infants to be pressed, that they might grow up foolish and without energy ; for he thought that Indians with large round heads, being audacious in any enterprise, might also be disobedient."¹ This practice, however, was very common in prehistoric times among various European and Asiatic races, and may be traced in some of the South Sea Islands. One of the Hamath hieroglyphics might represent an ancient Peruvian or modern Aymara.

The painting of the face for mourning, which prevails still among modern American races, is also probably a survival from ancient times, and it is worthy of note that the covering of the face, particularly of women, with white clay, prevails not only in the Andaman Islands and Australia, but also among one tribe in California,² where the paint used is formed from the ashes of the deceased husband, but generally the mourning colour in America is black. Another and very revolting burial custom of North America, that of scraping the flesh from the bones and placing it in a basket at the foot of the skeleton, which formerly prevailed among tribes of Virginia, the Carolinas and Florida,³ may fairly be compared with the common Chinese ivory carving of a skeleton carrying his flesh sewed up in a basket ; and another American custom, that of burning articles belonging to the deceased, in order that they may ascend to heaven in the smoke,⁴ is strictly analogous to the Chinese practice.⁵

These analogies between the customs ancient and modern of the eastern and western hemispheres might be indefinitely extended, for they meet the inquirer everywhere ; but the limits of this paper forbid my following them farther. Sufficient has, however, I think, been said to show that practices so identical and so widely extended must have had a common origin, for it appears to me impossible to imagine that *all* these things could have originated spontaneously in so many different centres. American anthropologists write generally in favour of the indigenous origin of American civilisation, and the monuments are indeed sufficiently distinctive ; but I would argue from the vast

¹ Smithsonian Report, 1879, p. 337.

² Markham's translation, "Fables and Rites of the Incas," p. 76.

³ The Yo-kai. See Yarrow's "Mortuary Customs," Smithsonian Contributions, p. 194.

⁴ *Ibid.*, p. 131.

⁵ *Ibid.*, p. 100.

accumulation of facts, that either the ancient prehistoric civilised peoples of America must have conveyed *their* ideas and customs to the Old World in some mysterious manner, or they must have received the germs of these ideas and customs from the eastern hemisphere. The route of such possible prehistoric intercourse is generally assumed to have been from China, or perhaps India, by way of the Pacific Islands, and the great monuments existing in many of these islands, evidently the remains of a race prior to the present inhabitants, certainly favour this theory; but there are difficulties in the way which must not be overlooked. And first the absence from these islands of all remains of pottery and metal tools, in the art of making both of which the Peruvians and Mexicans (if not the Central Americans and the mound builders) were expert, militates strongly against this opinion; but I do not think the environs of the great megalithic structures on these islands have been sufficiently explored to render it certain that such articles are wholly absent, although unknown to the present inhabitants. It is, however, possible that some of the many customs and beliefs common to America and Asia may have been conveyed by the Pacific route, whilst the arts of metallurgy and pottery may have travelled across the Atlantic, giving rise to those numerous coincidences which are found to exist between the religious myths and rites of sepulture in prehistoric Europe, Africa, and America; nevertheless, it must not be forgotten that it is in *Peru*, on the *Pacific* coast, that the pottery, as well as the religion and architecture, bears the stronger resemblance to those of the older prehistoric empires of Egypt, Western Asia, Asia Minor, and Greece, whilst in many other respects the affinity is great with China. Into this great and intricate problem I cannot now enter, but I believe that further investigations will eventually prove that in long bygone ages, as at the present day, there was a constant surging to and fro of peoples, sometimes by accidental migration, sometimes driven onward by enemies of a ruder race, yet always carrying with them fresh germs of thought, to be planted in new soil, to bring forth plants differing from those from which they originally sprang, although still bearing a family likeness to the parent stem.

I have not in this paper touched upon those points of resemblance so ably discussed by Dr. Tylor, Sir John Lubbock, Dr. Wilson, and others, my object being solely to bring forward those minor details which have not excited so much attention, but which yet seem to me to add much to the weight of evidence proving a prehistoric connection between the two hemispheres.

The following papers were read by the Assistant-Secretary:—

On some DOUBTFUL or INTERMEDIATE ARTICULATIONS:

An EXPERIMENT in PHONETICS.

By HORATIO HALE, Esq.

IN many languages, as is well known, there are elementary sounds of an indeterminate character, which seem to float between two, and sometimes even three or four, diverse articulations. The American and the Polynesian languages afford many instances of this sort, which have much perplexed those who have attempted to reduce them to writing. A striking example is found in the Hidatsa (or Minnetaree) speech, a language of the Dakota stock, of which we have an excellent account by Dr. Washington Matthews. In this language, he informs us, "there are two series of interchangeable consonants—a labial series, consisting of *m*, *b*, and *w*, and a dental, or linguo-dental series, consisting of *d*, *l*, *n*, and *r*." Dr. Matthews regards the *m* as the "standard letter" of the labial series, and the *d* as the "standard letter" of the dental series, and the other letters in each series as mere variants of these. That is, the word *mia*, mother, may be frequently heard with the pronunciations *wia* and *bia*; and the word *dopa*, two, may be heard as *nopa*, *lopa*, and *ropa*.

In the Samoan and Hawaiian languages of Polynesia, spoken in the Navigator group and the Sandwich Islands, the linguo-dental series has almost as wide a range of variation. The *l* and the *r* are constantly interchanged, and frequently pass into the *d* sound. *Hilo*, the name of a district in Hawaii, has in past times, before the orthography was settled by the missionaries, been spelt *Hiro* and *Hido*. *Fale-alili*, the name of a place in the Navigator Islands, has in like manner been written *Fale-aridi*. In the Canienga (or Mohawk) language the sounds of *l* and *r*, of *g* (hard) and *k*, of *o* and *u*, are constantly interchanged. The word for man (or, rather, "he is a man") may be indifferently written *rongwe*, *rungwe*, *longwe*, *lungwe*, *ronkwe*, *runkwe*, *lonkwe*, or *lunkwe*.

In the Hawaiian a remarkable interchange occurs between the sounds of *t* and *k*. *Teiti* and *keiki* for child, *tanata* and *kanaka* for man, are heard, and were formerly written indifferently. The element is really the Polynesian *t*, as is shown by comparison with other languages of that stock. The Hawaiian, so far as is known, is the only language of this family in which this singular interchange of *t* and *k* occurs. The missionaries, it is said, were perplexed in attempting to determine whether to use the *t* and *r*, or the *k* and *l*, in the alphabet of this speech.

They finally concluded to submit the question to the king, who decided in favour of the *k* and the *l*. So far as the *l* was concerned, the choice was a matter of indifference; but the use of the *k* has had the rather unfortunate effect of somewhat disguising, in the written language, the close similarity which exists between the Hawaiian and the other idioms of Polynesia. The Rev. Wm. Ellis, the distinguished missionary writer, author of "Polynesian Researches," and other valuable works, visited the Sandwich Islands in 1823. Throughout his narrative the well-known names which are now written Kamehameha and Liholiho, are spelt Tamehameha and Rihoriho. In this orthography they correspond with the forms in the Tahitian language, with which Mr. Ellis was familiar.

To a student of languages, in considering these interchangeable sounds, there are three hypotheses which may occur. It becomes a point of considerable importance, in pursuing an inquiry in regard to the origin of the variation of languages belonging to the same stock, to determine which of these hypotheses is the correct one.

1. We might suppose that every member of a people speaking one of these languages uses these interchangeable sounds indifferently—that a Hidatsa Indian, for example, in uttering the word for mother, says at one time *mia*, at another *wia*, and at another *bia*, as the fancy may strike him, or the euphony of the sentence may seem to require; and so a Hawaiian may say *tanata* or *kanaka*, *Rihoriho* or *Liholiho*, according to his momentary caprice or some casual notion of euphony.

2. Another view might be that some speakers preferred one sound in the series, and others preferred one or other of its variants. One Hidatsa might usually say *mia*, while another more commonly pronounced the word *bia*, and a third was more accustomed to say *wia*; just as in English one speaker may pronounce the vowel in the word "aunt" with the broad sound of *a* in *far*, while another may give it the slender sound of *a* in *fat*; or as one person may omit and another pronounce the aspirate in "humble."

3. A third supposition would be that the difference of sound was not in the speaker's utterance, but in the ear of the listener; that the sound as spoken was an indistinct articulation, intermediate between the sounds represented by the two or more letters of each series, and that the hearer, unaccustomed to sounds of this peculiar character, involuntarily made distinctions where none really existed.¹

Of the three theories thus suggested, the last would, at first

¹ The same subject is treated in Prof. Max Müller's Lectures on the "Science of Language," vol. ii, pp. 183-189.

thought, seem the least likely to be the correct one. Those who have studied the languages in which these uncertain sounds occur have generally adopted one or other—or sometimes both—of the two former suppositions. This, I must admit, was the case with myself, after considerable experience in this line of study. The third view, which supposes the discrimination of the sounds to be due, not to the speaker, but to the listener, had not occurred to me until it was forced upon my attention by the unexpected result of the experiment now to be recorded.

In July, 1872, I had the pleasure of spending a few days at the hospitable home of my friend, Professor Alexander Melville Bell, the distinguished author of "Visible Speech," and other esteemed philological works. Mr. Bell then resided near the city of Brantford, Ontario, at a short distance from the Grand River Reserve, which is occupied by the Canadian remnant of the Iroquois Confederacy. On one occasion we were joined by an intelligent Indian friend, Chief George Johnson, the Warden of the Reserve and Government Interpreter for the six nations. Chief Johnson was a well-educated man, a Mohawk chief of the highest rank, and spoke fluently the dialects of all the Iroquois tribes. The idea occurred to me of taking advantage of this opportunity to clear up, with the aid of the practised ear of Professor Bell, some doubtful points in Iroquois phonology. I proposed that we should take down a list of words in the Canienga (or Mohawk) dialect—Mr. Bell in the nicely discriminating alphabet of his "Visible Speech," and I in the method which I usually adopted in writing these languages. This was accordingly done, and the duplicate list, in Mr. Bell's manuscript and my own, was left with me for study and comparison.

The result was unexpected, and, as it seemed to me, instructive and valuable. In the languages of the Iroquois group, no distinction is made between the *r* and *l*. In the Canienga dialect the pronunciation seems to incline more to the sound of *r*, while in the softer Oneida speech the *l* sound appears to predominate. All the missionaries, Catholic, Anglican, and Methodist, though differing widely in some points of orthography, unite in using the *r* to represent this sound in the Canienga idiom. In the list of words which we wrote down this element occurred twenty-one times. Of these, I found on examination that I had written it ten times with *l*, ten times with *r*, and on one occasion had, in doubt, repeated the word with both orthographies. Mr. Bell had used the *l* nineteen times and the *r* only twice. In two cases in which he had employed the *l* sound he had adopted the character which represents the "non-sonant *l*," a delicate modification of that liquid which he discerns in the pronunciation of the French word *temple* and in the English *felt*.

From this statement it is evident that in eight words where I heard the sound *r*, Mr. Bell at the same moment heard the sound of *l*, either sonant or non-sonant. The conclusion appears inevitable that the sound which we heard was really neither *r* nor *l*, but an utterance midway between the two, and of such a character that to one listener it seemed an *r*, and to the other an *l*. One of the words, as has been stated, I wrote at the time in two forms *ro'niha* and *lu'niha*, meaning "his father." I was unable to decide which orthography most accurately represented the pronunciation I desired to preserve. This word was written by Professor Bell *lu'niha*.

It will be noticed that in writing this word I was uncertain both as to the first consonant and as to the first vowel. What may be called the "round vowel" sound (*o* or *u*, pronounced as in Italian) occurred in our list thirty-one times. I wrote it eighteen times with *o*, twelve times with *u*, and once—in the word just cited—with both *o* and *u*. Mr. Bell, with greater regularity, and probably a nicer ear, employed the *u* throughout. The Catholic missionaries, on the other hand, use only the *o*. The Protestant versions have *o* for the most part, but employ the *u* in a few words.

Many years ago, in taking down some of the languages of Eastern Australia from the lips of the natives, I ascertained the curious fact that their languages made no distinction between *e* and *i*, or between *o* and *u*.¹ They had, in fact, but three vowel sounds, which might be represented either by *a*, *e*, and *o*, or by *a*, *i*, and *u*, at the pleasure of the writer. The Iroquois make a clear distinction between the *e* and the *i*, which are not more frequently confounded in their dialects than in the Indo-European idioms. But between *o* and *u* in Iroquois no distinction exists, and from the evidence of the experiment now detailed it is clear that the sound is not a varying one, inclining at one time to *o* and at another to *u*, but a sound so exactly midway between the two as to perplex an English ear, and to lead two hearers to write the same utterance with different characters.

The Canienga language makes no distinction between the *k* and the *g*, or between the *t* and the *d*. The English missionaries use all these letters; the French missionaries employ only the *k* and *t*. The evidence of our list shows that the latter are most nearly accurate, as it is clear that in the native pronunciation the sound approaches more closely to the vowel than to the sonant utterance. Mr. Bell has written the *k* twenty-four times and the *g* only six times; he has the *t* twenty-six times, and the *d* four times. I wrote, in the same words, *k* throughout, and *t*

¹ All the vowels are to be sounded as in Italian or German.

in every instance but one—the word for “head,” which was written by me *onundzi*, and by Mr. Bell *unundzi*. The same word with *a* prefix (“my head”) was written by Mr. Bell *agenuntzinä*, and by me in two forms, *akenuntsine* and *akenundzine*.

The Iroquois language has a strong guttural aspirate, which the English missionaries express in some words by *h*, in others by *hh*, and in many instances by *gh*. The early Jesuit missionaries, as appears from Bruyas’s well-known work (*Radices Verborum Iroquoëorum*), had also a threefold notation for this sound, employing sometimes the *h*, sometimes the Greek χ , and sometimes the Greek *spiritus asper* (‘). The modern French missionaries, after long and careful study of the language, have decided that all these sounds are but variations, real or apparent, of a single element, which they represent by *h*. The experiment now recorded shows not merely that this view is the correct one, but also that the variations are only apparent, and depend rather on the ear of the listener than on any actual difference of enunciation. In our list I have written the *h* twenty times and the stronger aspirate (here represented by *q*) six times. Mr. Bell in the same words heard only the *h*; but he in three instances employs what he terms in his system the “breath-glide” (which I transcribe by the *spiritus asper* ‘) when I have used the *h* or the *q*. This occurs only in conjunction with the “non-sonant *l*,” (or *L*), as in *elhal'*, dog, which I have written *elhah*, and in *kel'hite*, tree, which I wrote *keglhite*. The aspirate and the liquid in these cases are so combined that it is difficult to say which is first uttered.

The first impulse of many persons on reading of these indeterminate vowels will doubtless be to account for them by the fact that the languages in which they occur are in the uncultivated or barbarous stage. Further consideration, however, will show that this view cannot be maintained. We know from the evidence of the Vedas, the Homeric poems, and the Moallakat, what was the state of the Sanscrit, the Greek, and the Arabic, at a time when the people who spoke these languages were unlettered barbarians. We are aware that the speakers of those tongues discriminated sounds with an accuracy and a variety which their more civilised descendants have failed to preserve. Further, we discover that many barbarous communities of the present day express delicate shades of pronunciation, which we can only with difficulty imitate. In the proper Dakota (or Sioux) language, for example, we learn from the excellent grammar of the Rev. S. R. Riggs, that not only are the surds *k*, *p*, and *t*, distinguished from the sonants *g*, *b*, and *d*, as in English, but that there is another distinction which does not

exist in our language. Each of the surds, as well as the composite sound which corresponds to the English *ch* in "chin," has a strong explosive or emphatic utterance, which makes of it a distinct element. This difference of sound is indicated in Mr. Riggs's alphabet by a dot under the emphatic letter. In default of these characters we may employ "small capitals." The following list will show how accurately these barbarous speakers discriminated in their phonology:—

Sonant.	Surd.	Emphatic.
be, to hatch	pe, sharp	PE, elm
da, to ask	ku, to come ta, moose cha, when	KU, to give TA, to die CHA, to dig

No instance of the sonant *g* is given, as that in the Dakota is merely a dialectical variation. The languages of the Maya, or Central American, family abound in nice distinctions of elementary sounds, which foreigners have a difficulty in acquiring. The Hawaiian, which confounds the *l* with the *r* and the *t* with the *k*, has preserved a peculiarity so apparently slight that the missionaries unfortunately have not deemed it worth indicating; and yet it is, in fact, of the first importance, both in science and in practical use. It is a hiatus, or catching of the breath, which shows where an element formerly in use has disappeared from the language. This element is the Polynesian *k*, which is still retained in the dialects of New Zealand, the Friendly Islands (Tonga), and some other groups, but has disappeared from those of Samoa, Tahiti, and Hawaii. Thus the original Polynesian *ika*, fish, becomes in Hawaiian *i'a*; *aliki* or *ariki*, chief, becomes *ali'i*, *kai*, to eat, becomes *'ai*, and so on. The first missionaries to these islands were intelligent and well-educated men; but, accustomed only to the English pronunciation, they failed to notice this delicate trace of utterance, or did not think it worth indicating. They themselves never acquired it, though their children, born and reared in the islands, use it habitually, like their aboriginal companions. In the native pronunciation, the words *ao*, daylight, *a'o* (for the Polynesian *ako*), to teach, and *'ao* (for the Polynesian *kao*), to sprout, are plainly distinguished; but in the ordinary orthography of the language, all these words are confounded in one spelling *ao*. It is precisely as though the English language were to be written for the first time by persons who could not distinguish the aspirate. No difference would be made in their orthography between *heat* and *eat*, *hair* and *air*; and in reading

of the "edge" of a field, we should not know, from the spelling, whether the writer referred to its border or its hedge.

The same peculiarity is found in the Iroquois dialects, and has been equally neglected by the missionaries, except in one instance. The Rev. Asher Wright, the late accomplished missionary among the Senecas, who had a turn for philology, and especially for distinguishing sounds, has employed a peculiar character, a modification of the *h* (which we may represent by *H*) to indicate this hiatus. He remarks of it:—"This letter never precedes a vowel. Following one, it should be spoken by giving the vowel an explosive force, and breaking it off suddenly, in such a manner as for the instant to stop the breath entirely, as we often hear white people in hastily pronouncing the interjection Oh!—especially when they repeat it several times in rapid succession, in indicating to a child that it is doing something wrong. This sound is very abundant in Seneca, and, used in conjunction with certain other modifications, the mode and time of verbs, and various other circumstances, are denoted by it. Often, also, it forms the chief distinction between words of very dissimilar meaning. No one can read or write Seneca intelligibly who does not pay the strictest attention to this character and avoid confounding it with the rough aspirate of the common *h*."

Thus, among the examples, we find that *haHniH*, "my father" (speaking of him), has for its vocative form *hahniH*, "my father" (speaking to him). *Wa-aⁿH*, "he said," differs only by the absence of this element in the first syllable from *wah-aⁿH*, "she thought." In the Tuscarora an example given to me by an intelligent school-teacher of that nation was *ohsōhkwa*, "finger," which differs only in this element from *ohsōhkwa*, "lip." In the Canienga or Mohawk dialect, this hiatus was noted by both Mr. Bell and myself, though, as was natural in writing a strange language, we did not always remark it, and in some instances it was noticed by one and omitted by the other. I have usually represented it by an apostrophe, as in *iksha'a*, "child," *lu'niha*, "his father." Whether the hiatus indicates in the Iroquois, as in the Hawaiian, the loss of an element, or is a mere trick of utterance, is a question not yet determined.

Many languages which have been reduced to writing of late years, in America, Oceania, and Africa, have undoubtedly suffered a serious impoverishment in their phonology from the fact that the persons by whom they were first written were foreigners accustomed only to the European mode of utterance. If the Sanscrit had been first written by an Englishman, a Frenchman, or a German, it is very doubtful if the distinction between the lingual and dental elements would have been preserved. The Arabic, under the like circumstances, would

probably have suffered a serious deterioration in its dentals and its gutturals. The fortunate circumstance that Mr. Riggs was an accomplished philologist has preserved in the Dakota language distinctions that would probably otherwise have been lost. But for this "lucky accident," the readers of that language would have had no evidence of the difference of pronunciation which exists between *ku*, to come, and *Ku*, to give. *Da*, to ask, *ta*, a moose, and *ta*, to die, might have been confounded in the Dakota, as *ao*, daylight, *'ao*, to teach, and *a'o*, to sprout, are now confounded in the Hawaiian. No one, probably, but a scholar familiar with the Semitic tongues would have distinguished and represented in the Dakota, the form of *G* which expresses "a deep sonant guttural resembling the Arabic ghain (ȝ) and the form of *H* which represents a strong surd guttural resembling the Arabic kha (χ)."

There are still many unwritten languages in Western Oceania and in Central Africa, for which alphabets will have to be provided. It will be fortunate if the persons to whom this important duty is entrusted shall be scholars trained in the scientific study of language. If this advantage cannot be secured, care may at least be taken that the work of settling the alphabet shall not in any case be entrusted to one person, however intelligent and well-instructed. The result of the experiment now recorded will show how essential it is that, to determine the real distinctions in the elementary sounds of a language, its words should be taken down by two or more persons, listening and writing simultaneously. In this way alone it will be possible to avoid, on the one hand, the danger of confounding sounds which should be kept distinct, and, on the other, that of finding distinctions where none really exist.

As regards the special results of this experiment, it will not be safe to infer that in all cases where such uncertainty prevails as is found to exist in the Iroquois and the Polynesian dialects in discriminating between sounds which to us seem widely different, this uncertainty is due to a lack of clear perception in the listener. It is highly probable that in some cases the pronunciation of the different natives, or of the same native at different times, actually varies. But the experience now set forth will at least serve to prove that this is not always, or perhaps usually, the case. We must recognise the fact, which has heretofore been overlooked, that in certain languages—and possibly in all languages—there are elementary sounds which affect so differently the ears of two listeners accustomed to a foreign speech, that in noting them they will be likely to use different characters to represent the same utterance. In other words, there are elements, in some if not in all languages, which

hold a middle place between two corresponding elements of some other language. And the sounds which these medial elements thus represent may even be as widely diverse as, according to our notions, the *r* is from the *l*, and the *t* from the *k*.

In our own language a singular instance of this peculiarity has been noted and well described in an article on Shakespeare by the distinguished philologist and Shakespearean commentator, Mr. Richard Grant White, which appeared in the *Atlantic Monthly* for June, 1884. Mr. White brings to notice the curious fact that in Shakespeare's time, and earlier, there were many English words in which the dental sound was written indiscriminately either with *t* and *th*, or with *d* and *dh*. He gives numerous examples, such as *stalwart* and *stalworth*, *fift* and *fift*, *better* and *bether*, *hundred*, *hundret*, and *hundreth*, *swarthy* and *swarty*, *murder* and *murther*, *burden* and *burthen*; and he continues—speaking of his own edition of Shakespeare's works:—"It will be observed that in the Riverside Shakespeare, *murder* has both its modern spelling and the form *murther*. The variation is that of the old copies, which was purposely retained. The pronunciation was not *murther*, with the *theta* sound, which is poorly indicated by *th*, nor exactly that of *d*, but just that, I am sure, which has survived in the north of Ireland (carried there by English invaders, and chiefly by Cromwell's troopers), and which we have all heard, *murdher*." This acute suggestion of Mr. White gives us a case which is exactly in point. Every one who has heard the Irish pronunciation of the word in question is aware that it is such as one hearer might represent by *murder*, while another would prefer to spell it *murther*. In other words, it is an intermediate sound between the *d* and the *th*, exactly analogous to the intermediate elements which are found in the Iroquois and other languages.

The manner in which differences of dialect, and finally of language, might grow out of this peculiarity of pronunciation is evident. If an emigrating horde, whose speech possessed these indeterminate elements, were to conquer and absorb a tribe accustomed to a more precise mode of utterance, these indistinct articulations would, in the mingled race, tend to assume a fixed and positive character in one direction. A like result, though in a different direction of change, might happen in a second or a third migration, encountering and overcoming other tribes. Thus the Hidatsa people might send out three conquering colonies, in one of which the word for "mother" might come to be always pronounced *bia*, in the second *mia*, and in the third *wia*. If the original Aryan speech possessed intermediate articulations

of the kind now described, it is easy to understand how in the progress of the conquering migrations of Aryan hordes which absorbed the original populations of Northern India and of Europe, the varieties of pronunciation signalised in "Grimm's law," as well as many other changes, consonanted and vocalic, would gradually arise. These changes, with the accompanying alterations in grammar, and the inevitable acquisitions of new words from the idioms of the conquered tribes, would finally produce the various Indo-European languages.

The following is the list of words taken down by Mr. Bell and myself. It must be borne in mind that the words were written hastily, with only one hearing, and with no opportunity of revision. Under such circumstances some mistakes are inevitable, and must be allowed for. In the orthography here adopted, the consonants have in general their English sounds, and the vowels their Italian or German sounds. The *ç* is sounded like the *sh* in "shine," and *tç* represents the sound of *ch* in "chest." The *q* represents the German *ch* (Greek χ). The *à* is the *Urvocal*, or the short English *u* in "but." The French nasal *n* is indicated by a small *n* above the line, and the English nasal (*ng* in "song") by *ñ*. The apostrophe (') marks the hiatus, or sudden catching of the breath, already referred to.

I have added the corresponding words in the forms severally adopted by the Anglican and the Roman Catholic missionaries, the former written for me by an educated Mohawk, and the latter derived from the Iroquois Lexicon of the Rev. J. A. Cuoq. For the purpose of comparison all the words are transliterated from the differing missionary orthographies into the alphabet employed in my own list. A study of these various forms, taken in conjunction with the facts of our experiment, will probably be found sufficient to establish the existence of several of those intermediate articulations whose part and influence in the phonology of language have been generally overlooked.

CANIENGA (OR MOHAWK) VOCABULARY IN FOUR RENDERINGS.

	Bell.	Hale.	English Mission.	R.C. Mission.
one ..	à"skäh ..	à"ska ..	à"skah, or a"nska	à"skat, à"sha.
two ..	tékiñh ..	tékenih ..	tekeni ..	tekeni.
three ..	äqsà" ..	ahsà" ..	ahsà" ..	aksa".
four ..	kayélih ..	kayélih ..	kayerih ..	kaieri.
five ..	wisk ..	wisk ..	wisk ..	wisk.
six ..	yäva'k'	yävak..	yayak..	iniak.
seven ..	tyatäh ..	tqatá' ..	jadahk ..	tsiatak.
eight ..	sätkü"	sa'téku"	çadeko"n	sateko".

CANIENGA (OR MOHAWK) VOCABULARY IN FOUR RENDERINGS—*continued.*

	Bell.	Hale.	English Mission.	R.C. Mission.
nine ..	tyūhtà ⁿ ..	tiōhto ⁿ ..	tyohdo ⁿ h ..	tiohto ⁿ .
ten ..	uyēli ..	oyēli ..	oyerie.. ..	oieri.
eleven ..	a ⁿ skāawà ⁿ li ..	a ⁿ skā yawà ⁿ li	a ⁿ skah ⁿ te .. yawà ⁿ re	a ⁿ skat iawà ⁿ re.
twelve ..	tegeniawà ⁿ li ..	tékeni yawà ⁿ li	tekeni yawà ⁿ re ..	tekeni iawà ⁿ ra.
twenty ..	tewahshà ⁿ ..	tewaqsà ⁿ ..	tewahshà ⁿ ..	tewasà ⁿ .
thirty ..	ahsànewáhsà ⁿ	aqsàniwáqsà ⁿ	ahsà ⁿ .. niwahshà ⁿ	ahsa ⁿ niwasà ⁿ .
forty ..	kayēliniwáhsà ⁿ	kayēliniwáqsà ⁿ	kayerih .. niwahshà ⁿ	kaieri niwasà ⁿ .
fifty ..	wiskniwáhsà ⁿ	wisk niwáqsà ⁿ	wisk .. niwahshà ⁿ	wisk niwasà ⁿ .
one hundred ..	à ⁿ skahtewà ⁿ - 'niäwi ..	à ⁿ skā tewà ⁿ - 'niäwe ..	à ⁿ skah ⁿ dewà ⁿ - niawe ..	èn ⁿ skat tewà ⁿ - niawe.
two hundred ..	tékñidewà ⁿ - 'niäwi ..	tékeni tewà ⁿ - 'niäwe ..	tekeni dewà ⁿ - niawe ..	tekeni tewà ⁿ - niawe.
three hundred ..	ahsà ⁿ dewà ⁿ - 'niäwi ..	ahsà ⁿ tewà ⁿ - 'niäwe ..	ahsà ⁿ dewà ⁿ - niawe ..	ahsà ⁿ tewà ⁿ - niawe.
one thousand ..	uyélitewà ⁿ - 'niäwi ..	oyéli tewà ⁿ - 'niäwe ..	oyeri dewà ⁿ - niawi ..	oyeri tewà ⁿ - niawe.
my father ..	rake'niha ..	rake'niha ..	rakeniha ..	rakeniha.
thy father ..	ya'niha ..	ya'niha ..	yaniha ..	hianiha.
his father ..	lu'niha ..	ro'niha, lu'niha ..	roniha ..	roniha.
my mother ..	istà ⁿ a ..	ista ⁿ ä ..	isdà ⁿ ah ..	istà ⁿ ha.
thy mother ..	sa'nistà ⁿ ha ..	sänistà ⁿ ha ..	sanisdà ⁿ ha ..	sanistà ⁿ ha.
his mother ..	lu'nistà ⁿ ha ..	ro'nistà ⁿ ha ..	ronistà ⁿ ha ..	ronistà ⁿ ha.
my head ..	agén ⁿ tzinà ..	akenu'tsine or akeno ⁿ dzine ..	akeno ⁿ dzhij or akeno ⁿ djineh ..	akeno ⁿ tsi.
thy head ..	zanüntsínà ..	sänu ⁿ tsine ..	sano ⁿ djhij ..	sano ⁿ tsi.
his head ..	laündntsínà ..	raonu ⁿ tsine ..	raono ⁿ djhij ..	raono ⁿ tsi.
my hair ..	agen ⁿ kwis ..	akenú ⁿ kwis ..	akeno ⁿ kwis ..	akeno ⁿ kwis.
hair ..	tinú ⁿ kwis ..	onú ⁿ kwis ..	ono ⁿ kwis ..	ono ⁿ kwis.
head ..	tinündzih ..	onú ⁿ dzi ..	ono ⁿ djhij ..	ono ⁿ tsi.
eye ..	ükälà' ..	okara ..	okara ..	okahra.
nose ..	u'nyu ⁿ sa ..	o'niü ⁿ sa ..	onyo ⁿ sa ..	omio ⁿ sa.
teeth ..	unäwi' ..	onäwi ..	onawi ..	onawira.
ear ..	uhü ⁿ ta ..	ohünta ..	oho ⁿ da ..	oho ⁿ ta.
hand ..	usnù ⁿ sa ..	osnù ⁿ sa ..	osno ⁿ sa ..	osno ⁿ sa.
tree ..	kél'hite ..	kéqlhite ..	kerhide ..	kerhite.
dog ..	élhal' ..	élhalh ..	erhar ..	erhar.
house ..	kanú ⁿ sa ..	kanú ⁿ sa ..	kano ⁿ sa ..	kano ⁿ sa.
town ..	kanàtä ..	kanàtä ..	kanada ..	kanata.
large town ..	kanatuwà ⁿ ..	kanatowà ⁿ ..	kanadowanà ⁿ ..	kanatowanà ⁿ .
man ..	lu ⁿ gwe ..	ruñkwe ..	ro ⁿ gwe ..	ron ⁿ kwe.
woman ..	ikshä'a ..	ikshä'a ..	exhaah ..	eksaa.
husband ..	lune ..	lone ..	rone ..	rone.
wife ..	tiagenitelu ⁿ ..	tiakenitelu ⁿ ..	teyagenidero ⁿ ..	teiakenitero ⁿ .
white ..	kà ⁿ lákà ⁿ ..	kà ⁿ rákà ⁿ ..	kà ⁿ rakà ⁿ ..	karakà ⁿ .
black ..	kahündzi ..	kahüntçi ..	kaho ⁿ jih ..	kahontsi.
yellow ..	utsinakwal' ..	otsinekwähr ..	odjinekwar ..	otsinekwär.
red ..	unékwa ⁿ karà ..	onekwà ⁿ tärk ..	onekwà ⁿ dara ..	onekwà ⁿ tara.
green ..	uhu ⁿ te ..	ohünnte ..	oho ⁿ de ..	oho ⁿ te.

The CUSTOMS and the LANGUAGE of the IROQUOIS.

By MRS. ERMINNIE A. SMITH.

FROM the days of the early Jesuit Fathers to the present time the general history and customs of the Iroquois tribes have been so faithfully chronicled that I may be pardoned if I present these people to you to-day only through their own medium of thought, their language.

It has been said, "A dead language is full of all monumental remembrances of the people who spoke it. Their swords and their shields are in it; their faces are pictured on its walls, and their very voices sing still through its recesses."

While the above has special reference to languages which have left a written record, it applies with even greater force to our aboriginal tongues, in which nearly every word contains its own little legend. Extremely interesting and important is the word-study of the Iroquois dialects, and through this study alone can we arrive at a correct knowledge of the people who used them.

Vocabularies giving a general interpretation are useless in comparison with a list of dissected words containing original Indian thought and Indian etymology.

Much time, I regret to say, has been lost by those who have analysed these words simply to trace their resemblance to words from Oriental families. Concerning this branch of investigation, I will venture to quote the conclusion of the celebrated etymologist, Skeat: "Mere resemblance of form and apparent connection in sense between languages which have different phonetic laws or no necessary connection are commonly a delusion, and not to be regarded." A closer study of these dialects proves in most instances the fallacy of striving to trace such analogies; *e.g.*, in a late work the Iroquois word *eh-tā'-ke*, lit., "on earth," is compared with roots from tongues very far apart, said to signify "inferior." The Iroquois word in its applied sense means "down," and in its literal, "on earth"; from *o-he"-tā*, field, earth, and *ke*, on; *o-he"-tā"-ke*, "on earth"; in no sense does it signify "inferior." Again, Professor Skeat says: "The whole of a word and not a portion only ought to be reasonably accounted for." In nearly all Iroquois work we find an almost total disregard of this important rule. Even Père Cuoq, who has done so much through his publications, fails in his *Lexique*, under the portion "Racines Iroquoises," to explain why he retains the incorporated pronouns and prepositions in the list of roots. Why not call them "words," and not "Iroquois roots"? And when these pronouns are dropped in composition,

why not explain that fact? Why should he in the verb *I-keks*, "I eat," say that the first *k* is servile, instead of calling it the first personal pronoun? In Bruyas's Dictionary, also, we find that when roots are given they are not separated from their pronouns, nor oftentimes from their tense signs. In the Dictionary of Père Marcoux he has given as the root the third person singular of the Indicative, but neither of the authors above referred to has adhered to any such rule.

The literal meaning of many Iroquois nouns is extremely interesting. The names of animals in very many cases refer to some peculiarity of the object. The rabbit, *Te-yo-hon-tă-ne-keñ-ha*, "It has two little ears together," alludes probably to the fact that when running the animal keeps its ears thrown backward and close together.

An ox	= {	<i>Te-yo-ti-nă-kă-es.</i>
A cow	= {	<i>Te-yoñ-nhos-kwaint.</i>
Rattlesnake	= {	<i>Rhu-çûñ-n'-rhûñ-n̄t.</i> He has to him a tassel.
Snake	= {	<i>Rhu"-skwă'-na".</i> He squirms.
Mule	= {	<i>Te-wă-hoñ'-tes.</i> It is long-eared.
Lizard	= {	<i>Tă-tis'-tă-tis,</i> its note.
Hog	= {	<i>Wăç'-kwă-rhă.</i> It immerses its mouth (lips).
Sheep	= {	<i>Te-yo-ti-nă-kă-roñ-toñ-hă'. </i> They have two little horns.

The goat and some other animals are named from their odour. Birds generally from their note, as: the yellow-bird, *kă-tci"-ka'-u'*; the whip-poor-will, *kwa"-kurh'-ya"-n'*. The oriole is called *teă'-kwi-yu*, meaning "large-thighed," and the goose *wă-te-ma"-nyăks*, "It breaks its voice." Nearly all trees are named from some quality.

Button-wood ..	= {	<i>wă'-rhûñ'-nă-tcûñ-n̄-wă'-ti.</i>
Poplar	= {	<i>Wăt-ăñ'-rhûñ-n̄'-ih-thă'.</i> It swings its leaves.
Alder	= {	<i>Yă-wa"-rhyăs-kă"-rhûñ-n̄.</i> It is hollow-hearted.
Iron-wood ..	= {	<i>Rhuhs-na"-ya"-n̄c.</i> He is becoming lean.

Tears translate as "eye-juice," sugar as "tree-juice." The feelings and passions are even more strikingly descriptive.

He is in agony.. = { *Rhu-litⁿ-nha"-kărh-'*_{yāⁿ}.
He eats his life.

A thing that is wonderful is scalp-raising; anything tempting, alluring, or captivating, is said "to unhook the mind."

Many homonyms occur, and some cause can generally be discovered to account for them, as in the case of the word "dandelion," which is the same as that for "sturgeon"; for when the flower makes its appearance in the spring it is the sign for the Tuscarora to take down his spear, and go to the capture of the sturgeon. The word *Rhu-nă'-kă-nă*, "wood-chuck," is applied to the Irishman, who, through central New York, was first seen engaged in digging canals and throwing up earth for railway embankments. The interpreter for a person, or for a tribe, is sometimes called "Ear." Different peoples are named after the same fashion. The English, who were first seen coming from the direction of the dawn, received that name with the suffix *-ă-kăt*, which may be interpreted *ites*; whence we have—

Nyurh-hūn'c'-ăkă'. = It dawns-ites.

The first regular hatchets were imported by the French, and furnished the name "axe-makers" to the people who bought them. The word Boston, which the Iroquois softened into *Wds'-lū'*, plays no mean rôle in Iroquois nomenclature. As Boston in the early days was an important rallying place for those Americans who first became identified as a nation, the Iroquois added to *Wds'-lū'* the *-d'-kd'*, which gives us *Wds'-lū'-d'-kd'*, or Bostonites, which thereafter represented to them the whole American people. The most important of all the dissectionable or connotive words are those in which we find buried an extinct custom. Of such we have the word for hunting-dress, *ya''n-nya''n-td'-rhūn-kwā'*, "what she puts on wood," from *o-ya''n-td'*, wood, and *Rhu'-rhd''n*, "He is arrayed in;" this alludes, no doubt, to the skeleton framework of wood worn by the hunter, over which he could throw the skin of whatever animal he wished to imitate, as he went forth with his concealed bow and arrows to the chase.

Another study is the Tuscarora, or rather Turquois, word for *warrior*, which analysed yields "bone-bearer." What may this signify? The Indians can no longer give an explanation. The word has become simply *denotive*. We can only surmise. Did the warriors of that olden time bear away from their conflicts the bones of their fallen comrades? Or did they superstitiously

carry about themselves some charmed bone to insure their victory ?¹

Another suggestive word is the one for burial-ground :

Wd'nuññ-nuññ-çrhdññ = They are sunk as to their trunks;

implying the *sitting* posture as the manner of burial. I might continue enumerating such modern words as—

Whiskey = Deformed liquid,

Brandy = Real medicine,

and the word for renown, which is, in one of the dialects, the note of a bird which is constantly calling. But I will pass on to a short study concerning the pronouns in Iroquois, in the hope of obtaining an intelligent opinion upon certain points where I have ventured to differ from accepted forms. Allow me here to observe that I had already coimplied chrestomathies in four of these dialects before having seen any of the valuable contributions of the French missionaries to this branch of Indian linguistics.

Two years since, when at Caughnawage, I obtained, through the courtesy of the Rev. Father Antoine, the Superior of the Order Oblat, and the most obliging missionary, Père Burtin, both celebrated Mohawk scholars, access to the invaluable Dictionary and Grammar of the late Père Marcoux, which books belong to the Mission. Upon examination of this Grammar I perceived that our principal point of difference was in the use of the pronouns, or rather in their distribution or nomenclature. The Mohawk Grammar of Père Marcoux follows the division made of that dialect by the early French Jesuits into two genders, a noble and an ignoble, a division of course necessitating a corresponding classification of the pronouns, which, however much it might facilitate a knowledge of the Iroquois to their own countrymen, would be folly for us to accept as a model for English students. The noble, or masculine, gender of these pioneers included men, angels, and God ; the ignoble, or feminine, included Satan, demons, evil spirits, animals, both male and female, things, and women. Modelled as nearly as possible after the French, and with this sweeping feminine gender, there was consequently no use for an *it*, which is not made to appear, but the indeterminate *on* of the French finds a place.

Mr. Hale, who has followed this classification, expressly says, "There is no neuter form in these dialects," &c. Against such weighty opponents my simple assertion would count for very

¹ Since this paper was written and read, Mr. Cushing has explained that it is still the custom among some Western tribes for the warriors to scrape the bones of their slain and carry them home for burial.

little; I will therefore present my reasons for assuming my position.

The use of the pronouns and their relations to one another may be considered as the greatest difficulties which the student of the Iroquois dialects has to encounter. The peculiarity of different words requiring unlike pronouns for the same person and number, and the great number of these arbitrarily used pronouns, have undoubtedly greatly puzzled most pioneers in Indian languages. Instead of the two genders, "noble" and "ignoble," we find in these dialects the masculine, the feminine, and the neuter genders—three instead of two. The simple proclitic pronouns of third person singular are the only words of the singular number that specify the gender of the objects to which they refer.

The simple third person masculine (*he*) has one form of the prefixive pronoun. It is always incorporated, and in Tuscarora it is *rhd-*, which, in some of the dialects, is aspirated into *ha-*. The sound *rh-* is a simple trill of the tongue; hence *rhd-* is nearly equivalent to *r-r-r-d*, or *r-r-hd*, or *hd-*.

The simple third person feminine (*she*) has three forms, *ydk*, *k-*, *ye-*, or *yd-*; these are always found incorporated.

The simple third person neuter also has three, *wd-*, *kd-*, *yo-*, or *yu-*, which are also always incorporated.

The indeterminate, or indefinite, pronoun, is expressed separately, is indeclinable, and is never compounded with verbs, or their equivalents. The Tuscarora *Sd'-kd"-nā'* is equivalent to, or is an exact synonym of, the Mohawk *oñ'-ka*, some one, somebody. This pronoun in the singular, when followed by its verb, which has no incorporated objective personal pronoun, expresses its gender through the verb's incorporated nominative, as, "Some one works" becomes "Some one *he*, or *she*, works," thus:—

Sd'-kd"-nā' rhu-yu"-nā' = Some one, he knows.

Sd'-kd"-nā' kd-yu"-nā' = Some one, she works.

Std-d-wd-n"-tā' yu-yu"-nā' = Something, it works.

The last form is used in speaking of animals or senseless things, but never when speaking of persons. The following are examples of the preceding rule taken from the Mohawk dialect:—

O-the'-non wd-tho'-rātc ... = Something, it makes cold.

Oñ-kd ok Rā-noñ'-wes' ... = Some one, *he* likes.

Oñ-kd-ok ye-noñ'-we's ... = Some one, *she* likes.

O-the-noñ kd-noñ'-we's ... = Something, it likes.

Oñ-kd Rā-tkāh'-tos ... = Some one, *he* looks.

Oñ-kd yoñ-tkāh'-tos ... = Some one, *she* looks.

O-the'-noñ wd-tkāh'-tos ... = Something, it looks.

This is the only method of expressing in these dialects the indeterminate "on" of the French, in words which have no infixes object pronoun. In these words we are obliged, by the very nature of the Iroquois pronouns, to express clearly the gender of the "some one," or of the "something."

Upon pages 21 and 130 of the Grammar of Père Marcoux we find the following:—"On is the third person indefinite, and is found in all verbs and in all time," and in the conjugations of that Grammar the feminine *elle*, or *she*, is applied to all words representing things to which in English we would apply it, and the indeterminate *on* is made to serve under exceptions (for with his "Principes Fixes," Père Marcoux is ever consistent) for what, I feel convinced, is the feminine; therefore, I conclude that his feminine pronouns are in fact the neuter, and his indeterminate the real feminine pronouns which I trust will appear.

Upon page 81, "Essential Remarks upon the Use of Verbs," we find that "The third indefinite should be used in place of the third feminine, out of respect and politeness when alluding to women."

Thus by an exception he would allow us to use for the feminine what according to our table is the real feminine. Under this remark we find the following examples:—

Ke'-ka"^{n'} n'is'-tëñ-hă' .. = I see a person, my mother,
for

K-ka"ⁿ nis'-tëñ-hă' .. = I see *it*, my mother.

Ye'-te-roñ.. .. = She abides, is at home,
for

Këñ'-te-roñ .. = It abides, is at home.

(Under the general rule, this latter form would still stand for a woman.)

Te-să-kö"-snie ne ro'-sot'-hă' = He attends *one*, his grandmother,
for

Te-hă"-snie ne ro'-sot'-hă' .. = He attends *it*, his grandmother,

Ya'-kă-wëñ-he'-yoñ .. = She is dead,
for

Ya'-wëñ'-he'-yoñ .. = It is dead.

In these examples Père Marcoux enforces the use of his indeterminate pronoun (which is our feminine) in the place of his feminine (which is our *it*), and in reality brings all woman-kind under their own pronouns, thus separating them from the surrounding of beasts, male and female, demons and things, with which he first environs them.

To what an emergency Père Marcoux was reduced to uphold consistently his division of gender, appears in the appended list

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of idioms, in which he says (page 132), "It has been said in the first part that men alone were of the noble gender, and that the feminine gender belonged to women, animals, &c."

It is for this reason that *Ra-tcin* ("He is male") must be feminised when speaking of animals. Therefore, one says *Kd-tcin* ("She is male"). It is necessary to say that the translation which our classification of gender would allow for the latter, rendering the *Kd-tcin* "It is a male," is the correct one.

Again, upon page 56, under "Impersonal Verbs," Père Marcoux remarks that these verbs have but one person to each tense, and that this person is always the third person feminine. For instance, where in the French one would say "*Il pleut*," which in English must be translated *it rains*, not recognising an *it*, he gives his feminine, which appears on our table as the neuter; thus:—

<i>Yo-ka</i> "n-no'-r̃s ..	..	=	It rains.
<i>Yo-ka</i> "n-no'-r̃s ..	..	=	It rained.
<i>A</i> "n-yo-ka'"n-no'-r̃s ..	..	=	It will rain.
<i>Ka</i> "n-he'-yoñs ..	..	=	It is dying. (M.)
<i>Wd-ke'-ra</i> "n _s ..	..	=	It snows. (M.)
<i>Wuñ-n'-tut</i> ..	..	=	It rains. (T.)
<i>Kd-wl'-çrhud</i> ..	..	=	It frosts.
<i>Kd'-tkwud</i> ..	..	=	It snows.
<i>Kd-teč'-tus'-thd'</i> ..	..	=	It makes it cold.
<i>Yu'-huks</i> ..	..	=	It is light.
<i>Wu'-nätc</i> ..	..	=	It blows.

I will remark here that I have found no impersonal verbs, and that in each of the foregoing examples the full conjugation of each person, in the various moods and tenses, may be given as follows:—

<i>K-ke'-ra</i> "n _s ..	..	=	I snow	(lit., pile).
<i>S-ke'-ra</i> "n _s ..	..	=	Thou snowest	"
<i>Rd-ke'-ra</i> "n _s ..	..	=	He snows	"
<i>Ye-ke'-ra</i> "n _s ..	..	=	She snows	"
<i>Wd-ke'-ra</i> "n _s ..	..	=	It snows	"
<i>K-u'-nätc</i> ..	..	=	I blow.	
<i>S-u'-nätc</i> ..	..	=	Thou blowest.	
<i>Rh-u'-nätc</i> ..	..	=	He blows.	
<i>Yd-k-u'-nätc</i> ..	..	=	She blows.	
<i>W-u'-nätc</i> ..	..	=	It blows.	
<i>K-teč'-tus'-thd'</i> ..	..	=	I make it cold, cool, I cool it.	
<i>S-teč'-tus'-thd'</i> ..	..	=	Thou, &c.	
<i>Rh-d-teč'-tus'-thd'</i> ..	..	=	He, &c.	
<i>Ya'-teč'-tus'-thd'</i> ..	..	=	She, &c.	

<i>Kit-tcd'-tus-thd'</i>	..	= It, &c.
<i>K-w̄n'-tute..</i>	..	= I rain, wet by sprinkling.
<i>S-ūn'-tute ..</i>	..	= Thou, &c.
<i>Rh-w̄n'-tute</i>	..	= He, &c.
<i>Yāk-w̄n'-tute</i>	..	= She, &c.
<i>W-ūn'-tute</i>	..	= It, &c.

Upon page 69, Père Marcoux says: "The personal verbs may be used impersonally, as: *ioiánere*, 'it is good,' from *wakidnere*, 'I am good'; *ioteriwison*, 'it is a finished matter,' is a contract, an order, from *wā-kā-te-ri-wí-soñ*, 'I made a contract,' &c.; *io-nwé-sēñ*, 'it is pleasant,' from *wā-k-oñwé-sēñ*, 'I am agreeable,' pleasant, &c.; *io-tsā'-nit*, 'it is terrible,' from *wā-ké-tsā'-nit*, 'I am terrible,' &c."

The necessity which Père Marcoux here finds for impersonalising all verbs in order to give to the pronoun he has denominated *she* its proper neuter sense, in a manner divides gender into the three divisions which we have claimed for it. Furthermore, by thus impersonalising all verbs, causing the *she* always to represent the English *it*, and the indeterminate *on* to represent by exception the *she*, we find ourselves really occupying the same ground, Père Marcoux's arrangement suiting better the understanding of the French student, and the other certainly simplifying the language to the English student.

In the valuable Dictionary of Père Bruyas, no indeterminate "*on*" is recognised, and that author translates *i-wās*, by the French *cela*, or that; *i-wā*, "that is as large as," and says that form is used *de rebus inanim*.

The old Onondaga Dictionary, published by Mr. Shea, does not in its numerous conjugations give any indeterminate pronouns. From the very best native authority in each one of the dialects I have received the confirmation of the existence of the pronoun *it*.

On page 399 of Morgan's "League of the Iroquois," we find the statement of the existence of three genders, also in the writings of Mr. Ashur Wright, who was so long a missionary to the Senecas. In conclusion, I will say that although I have given these pronouns exactly as I have taken them down from the best native authority in each tribe, yet it is not to be supposed that they are invariably used correctly; the most notable exception being the use of each of the singular third personal pronouns in place of the plural. This has probably arisen from the influence of the facts, first, that Philosophy has never directly aided in the formation, or establishment, of the general laws of language; and secondly, that in Iroquois there are no fully differentiated nouns which should correctly represent,

regardless of sex or gender, a collection, or community, of persons, or things animate, or senseless, that form, from common interests, conditions of being, customs, or habitation, or all of these combined, a single being, or individuality, so to speak. I will say that when the force of the singular feminine pronoun *she* is governed, or *restricted*, by the article, or by a noun of multitude, or by a plural suffix, as, *ni-yoñ*, or *nūñ*, or by all of these conjointly, *it* is, and may then be, employed *with its predicates*, as non-wholly differentiated collective nouns whose gender, or sex, is not necessary to the strength and the clearness of the context in which they occur. The pronoun *ya''* of the Tuscarora, and *ye* of the Mohawk and the other dialects, are, I believe, the only forms of the feminine pronouns used in these curious substantive predicates.

The following examples will serve, with slight or no changes of pronunciation, for any one of the dialects of the Iroquois:—

Ya'' = She, is Tuscarora.

Ye = She, is common to the other dialects.

The names, or appellatives, of a tribe, people, or race, are "nouns of multitude."

-ti-yoñ' (-ni-yoñ) and *āñ' (-tāñ')* are plural distributive suffixes, having a peculiar force, &c.

Ya''-ta''-krha'' = She inhabits, dwells, &c.

Hāñ'-ya''-ta''-krha'' = The people, nation, inhabitants.

Ya''-ta'-krha''-ti-yoñ' = The peoples, nations, inhabitants, &c.

Tu'-a''-kāñ' = Senecas.

Tu'-a''-kāñ' ya''-ta'-krha'' = Seneca people, the S. people.

Hāñ'-Tu'-a''-kāñ' ya''-ta'-krha''-ti-yoñ' } = The various peoples, tribes, &c., of Senecas.

The feminine singular does not include the regular plural, and in correct speaking is not much used. The masculine singular *he* is frequently used, for emphasis probably, instead of the pronoun *she*; the masculine dual and plural are often used when only one man is included.

Rather than be astonished at these apparent inconsistencies, let us wonder that there are so few in connection with the vexed question of pronouns. I have purposely avoided drawing any analogies or comparisons with the construction of other languages, or noting such parallel coincidences as the use of *sie* in the German for the pronouns *she*, *you*, and *they*, or alluding to the various vicissitudes of the English pronoun. I have taken

the language just as I found it, independent of any fixed principles, neither noting nor recognising any resemblances; and trusting that this paper will at least illustrate the difficulties in the way of conforming these fundamentally different dialects to the exact rules of any modern language, I offer it to the consideration of those interested in the languages of the American aborigines.

On the ANDAMAN ISLANDS, and their INHABITANTS.

By E. H. MAN, Esq., F.R.G.S., &c.

(Read on May 13, 1884.)

IN considering the habits, customs, and physical peculiarities of a savage race, it is important to acquire as much information as possible regarding the land they inhabit, and also to ascertain the nature and extent of the influences exercised by, or resulting from, their intercourse with other nationalities. It is therefore my purpose to present the reader with a brief sketch, by way of supplement to my previous papers on the Aboriginal Inhabitants of the Andamans, which appeared in the "Journal of the Anthropological Institute" for 1882-3, giving a few of the many points of interest connected with the Andamans, and referring to the writings of Messrs. Ball, Hume, Kurz, and other specialists for information regarding the geology, ornithology, &c., of the islands, which subjects are deemed to lie somewhat outside the scope of this Journal.

The Andaman Islands, which till within the last hundred years were almost *terrae incognitæ*, are situated in the Bay of Bengal, between the 10th and 14th parallels of N. lat. and near the meridian 93 E. of Greenwich; they comprise what are known as the Great and the Little Andamans, and, together with the Coco and Preparis Islands to the north, and the Nicobar Islands which lie to the south, form a volcanic chain extending between the province of Pegu and the northernmost point of Sumatra.

Great Andaman¹ is about 140 miles long, and includes not only the three main islands known as North, Middle, and South Andaman, but also the Archipelago, Interview, Rutland, and various lesser islets adjacent to its sea-board. At a con-

¹ For the probable derivation of the name "Andaman," the reader is referred to "Journ Anth op. Inst.," vol. xii, No. 40, p. 70.

siderable distance eastward of Great Andaman, but connected with the group, are two small uninhabited islands known as Narcondam and Barren Island, both of which contain volcanoes, though the latter only is active at the present day. To the south, and about midway between Great Andaman and the northernmost point of the Nicobar group, lies Little Andaman, consisting of a single island about 27 miles in length, and varying in breadth from 10 to 16 miles; there are also a few small islets near its coast.

None of the islands exceed 20 miles in breadth, and the area of the entire group is estimated at about 2,508 square miles, four-fifths of which are comprised in Great Andaman.

Nearly all the high land occurs in the vicinity of the east coast, shelving gradually towards the west, where few, and those but minor, elevations are to be found. The principal hills are: Saddle Peak¹ (2,400 feet) in North Andaman, overlooking Port Cornwallis; Ford's Peak (1,400 feet) on Rutland Island; and Mount Harriet (1,100 feet) in South Andaman, commanding the harbour of Port Blair.

The climate of the Andamans much resembles that of Lower Burmah, and the temperature throughout the year is very uniform; the variation in the shade during the dry season is about 22°, and averages 17° during the remainder of the year; the extreme variation throughout the twelve months may be estimated at 26°, viz., between 70° and 96°. The cool season sets in during the last weeks of December and early part of January, and the hot season lasts through the months of March and April. The S.W. monsoon commences in the latter part of April or early in May, and usually terminates about the end of October, but on the change in the direction of the wind to N.E. heavy showers frequently occur for several weeks, and even, though at rare intervals, in January and February. The average number of wet days in the year is 182, and the rainfall 116 inches; the dry season is usually characterised during the first two months by strong winds from N.E., which cause sickness and prove equally prejudicial to vegetation. Although it has been ascertained that many of the most severe cyclones which have occurred in the Bay of Bengal during the past twenty-five years have had their origin in the immediate vicinity of the Andamans, only one is recorded (viz., in 1864) as having visited the islands themselves; in the same period there have been a few earthquakes, the first of which mention is made took place in August, 1868, and the next in February, 1880, from which time several slight shocks were felt until, in December (31st), 1881, another severe earthquake visited the group, the effects of which were

¹ The only ascent on record of Saddle Peak was made in February, 1882, by Major M. Protheroe, C.S.I., and other officers of Port Blair.

experienced on both the Indian and Burman coasts; another, though slighter, shock was felt on February 27th, 1882.¹

Among the many noteworthy features of these islands are the numerous harbours in which, especially on the east coast, safe anchorage can be obtained at all seasons of the year; the most important and best known of these harbours are: Port Blair in South Andaman, and Port Cornwallis² in North Andaman; of both it has been said they may be classed among the finest harbours of the world, affording ample accommodation as well as shelter to even "half the British navy," in addition to which, from their central position in the Bay of Bengal, they present great advantages to vessels in need of refitting, and also as ports of refuge.

The water³ in the harbour of Port Blair has been found to be remarkable for its high density, as is evidenced by the rapid oxidation of iron immersed in it; its extreme clearness has also attracted the notice of many, who have viewed through its pellucid depths the wonderful coral beds which abound in certain parts of the coast. The marvellous variety of the colouring to be found among these corals must be seen to be appreciated, but some idea of their wondrous beauty may be formed from the following extract:—"As we steamed along, visions of the splendours of the submarine world broke upon our view; . . . I feel quite unable to attempt the task of describing, much less conveying an adequate idea of the exquisite assortment of colour, of the varied forms of life which were included in every square yard of these tropical coral reefs. The most gorgeous combination of vegetable and animal life afford but a poor sub-aërial representation of these submarine gardens."⁴ But to return.

¹ On the occasion of the disastrous earthquake in the Straits of Sunda (August 26th, 1883), a report as of a distant signal gun was heard at Port Blair at about 9 P.M. of that day, followed by several similar reports at irregular intervals during the next two days. It was thought at the time that a vessel was wrecked off the coast, and the station steamer was sent out to render assistance; at 7 A.M. on Monday (27th) the sea rose and receded thrice in the course of a few minutes.

² This was the harbour selected in 1824 as the rendezvous of the fleet conveying the expedition under Sir Archibald Campbell to Rangoon during the first Burmese war.

³ The supply of water from the tanks and wells in the Settlement is pronounced on medical authority to be both good and plentiful, and no diseases have ever yet been traced to the use of these waters.

⁴ *Vide "Jungle Life in India," pp. 359-360, by V. Ball, Esq., F.R.S.* The vivid description by the same writer of a coral reef at the Nicobars (*vide p. 202*) is so applicable also to those at the Andamans, that I feel the reader will thank me for appending it in this place:—"There are corals which in their living state are of many shades of fawn, buff, pink, and blue, while some are tipped with a majenta-like bloom. Sponges which looked as hard as stone, spread over wide areas, while sprays of coralline added their graceful forms to the picture. Through the vistas so formed, golden-banded and metallic-blue fish meandered, while on the patches of sand here and there the *holothurias* and various mollusca and crustaceans might be seen slowly crawling."

The other harbours which may be mentioned are: Stewart's Sound, Port Campbell, Port Mouat, Kyd Island Bay, Port Andaman, and the Bay between South Andaman and Rutland Island. There are besides many good anchorages, and several navigable channels have been discovered by successive commanders of the Settlement steamer, but in the absence of any other guide than Blair's old chart, which as relating to a coral-bound coast must require considerable revision at the present day, and with the knowledge that the extent of the shoals and reefs¹ is only approximately indicated in many parts, those unacquainted with the coast find it necessary to take a circuitous route and to exercise great care in proceeding from one point to another, especially on the northern and western shores, where the coral banks and reefs are known to extend as far as twenty miles seaward. Several creeks on the three main islands of Great Andaman are of a sufficient size to allow of the passage of boats for a considerable distance into the interior, and though of course these are of no little importance in opening up a country like the Andamans, they are chiefly valuable as affording a natural channel for the conveyance of produce from the extensive tracts of rich land² in their immediate vicinity, in lieu of the costly and indifferent land carriage which in the absence of such water-way would have to be substituted.³

The natural beauty of the scenery of the Andamans never fails to awaken the admiration of every visitor, and has been deservedly eulogised by various writers, one of whom (Prof. Ball) says: "Of all the places I have seen in Europe, Killarney can alone convey an idea of these scenes. The blue waters, the luxuriant emerald green vegetation down to the margin of the coast, and the passing showers which brighten all the aspects of nature, have their counterpart here."⁴

Various theories have been advanced with regard to the origin and affinity of the aboriginal population of the Andamans, but no certain information is obtainable in the matter. The statements of the early Arabian travellers, and also of Marco Polo, give grounds for believing that the Andamans were inhabited

¹ These are formed chiefly of *Caryophyllia*, *Madrepora*, *Porites*, *Meandrina*, and other reef-forming corals (Kurz).

² By means of a comparatively light embankment, these lands are capable of cultivation to the very borders of the creek.

³ Probably ignorance, and not disregard of these and other considerations which might be adduced, has led to the suggestion by some visitors (including two able officers of long standing) that the bunding of the deep mouths of such creeks would prove highly advantageous by adding largely to the area of land suitable for paddy cultivation; had, however, their observations been made during the rains instead of during the dry months, their opinions would doubtless have been considerably modified.

⁴ *Vide "Jungle Life in India," by V. Ball, Esq., F.R.S., p. 362 (1880).*

centuries ago by the progenitors of the present race, and afford (apart from the knowledge that the interior of the Malayan Peninsula, as well as of the Philippine Islands, has been from very distant times occupied by Negritos closely resembling if not also closely allied to the Andamanese) strong *prima facie* evidence against the somewhat plausible tale which found credence at one time—*i.e.*, that these islands were originally peopled by a cargo of African slaves saved from the wreck of a Portuguese ship. It is surprising that this hypothesis, which has long since been disproved, should have ever been entertained, for, as Professor Owen has observed, “it is to be presumed that the Portuguese would import from the Guinea coast, or other mart of Negro slaves, individuals of the usual stature, and it is incredible that their descendants, enjoying freedom in a tropical region affording such a sufficiency and even abundance of food as the Andamans are testified to supply, should have degenerated in the course of two or three centuries to the characteristic dwarfishness of the otherwise well made, strong, and active natives¹ of the Andaman Islands.”²

The persistence with which travellers and writers, from the earliest times³ to a comparatively recent date,⁴ have maintained that these aborigines are anthropophagi would be remarkable were it not a common experience that idle tales, especially when of a prejudicial character, have always been readily accepted,

¹ The following remarks, which appeared in a report of a lecture delivered by Professor W. H. Flower, F.R.S., will be read with interest in this connection:—“It is very possible—but this is purely hypothetical—that the Andamanese, whose geographical position is almost midway between either extremes of the range of the woolly-haired races, may be the unchanged or little modified representatives of a primitive type from whom the African negroes on the one hand, and the Oceanic negroes on the other, have taken their origin, and hence everything connected with their history or structure becomes of the greatest interest to anthropologists” (*vide Brit. Med. Journ.*, May 3, 1879).

² Prior to 1879 the theories which had been advanced to account for the colonisation of the Andamans by their present peculiar inhabitants were summed up by Dr. Dobson, F.R.S., as follows:—

The present inhabitants of the Andamans are—

- I. The descendants of shipwrecked negroes escaped either from some Arab slave-ship carried out of its course by adverse winds, or from a slave-ship wrecked on the Andamans on its way to the Portuguese Settlement in Pegu (Symes’ “Embassy to Ava,” *Calcutta Monthly Register*, 1790).
- II. Aborigines not connected on any anatomical grounds with the people of any existing continent (Owen).
- III. Negritos—negroes (Huxley).
- IV. Negritos or Semangs from the Malaya Peninsula (Wallace).
- V. Mincopie branch of the Negrito division of an original negro stock (Quatrefages).

³ *Vide* Colonel Yule’s “Marco Polo,” vol. ii, p. 251.

⁴ *Vide* Mouat, p. 71, and W. W. Hunter, who writes: “During the next half century (*i.e.*, from 1796) the Andamans appear in the records only as a cluster of cannibal islands” (*vide Imperial Gazetteer of India*).

whether they relate to individuals or to races; the origin of the belief in this instance may possibly be traceable to the inveterate hostility which they have manifested towards all strangers approaching their shores, but for which abundant excuse can be found in the accounts given by Capt. Miller¹ of the malpractices of the Malay and Chinese traders who visited these islands in search of *béche de mer* and edible birds' nests.

To this belief may in all probability be also attributed the fact that these islands were avoided by most voyagers, and hence no records exist with reference to their history prior to the close of the last century, when the Honourable East India Company, recognising the advantages which the group afforded for a penal colony, sent down Lieutenant Blair (who had previously been commissioned to survey and report upon the islands) in charge of a small expedition and with instructions to provide for the reception of prisoners.

A Settlement was accordingly formed at Port Blair, then known as Port Cornwallis, where Blair displayed much energy and skill in his arrangements. After a brief residence of three years, during which the colony enjoyed excellent health, and Blair was able to report favourably of his relations with the aborigines,² orders were received from Calcutta for the removal of the entire establishment to the magnificent harbour in North Andaman, where it was proposed to form a Naval Arsenal. The transfer was effected in 1792, and the newly occupied station was named Port Cornwallis, while the recently abandoned Port was styled "Old Harbour," by which name it continued to be known till 1858, when, at Dr. Mouat's suggestion, it was appropriately changed to Port Blair. The new site selected for occupation, despite its apparent natural advantages, proved most unhealthy, and a year had hardly elapsed before it became evident that the change from South Andaman had been ill-advised; it was not, however, till February, 1796, that, in consequence of the continued sickness and high death rate, Government finally decided upon the abandonment of the colony, and the removal of the prisoners (numbering 270) to Penang, while the free settlers and troops were conveyed back to Bengal.

From this date the islands remained unoccupied by aliens for

¹ *Vide* Mouat, p. 22, and "Journ Anthropol. Inst." vol. xii, No. 42, p. 339.

² Both his account and that of Lieutenant R. H. Colebrooke, who visited the islands about the same time (if not actually in each other's company), were published, the latter appearing in vol. iv. of the "Asiatic Researches." Although the accounts furnished by them do not in all respects accord with our present knowledge of the habits of these savages, it must be borne in mind that, apart from the difficulties which attend inquiries prosecuted as were theirs, with but little or no acquaintance with the language spoken by the savages, various changes or modifications have probably occurred during the long lapse of years which may account for many seeming discrepancies.

sixty-two years, during which period all that is known regarding them or their inhabitants was derived from accounts published of casual visits paid by Government or trading vessels;¹ but as these add little to our information it is unnecessary to particularise them further than to say that they confirm the reports furnished by Colebrooke of the degraded condition of the savages and their inveterate hostility towards all strangers.

The modern history of the Andamans may be said to date from the latter end of 1857, when the scheme of founding a penal settlement and harbour of refuge in these islands, which had been under consideration for a few years, was precipitated by the events connected with the Sepoy mutiny. A Commission, composed of Dr. F. J. Mouat as President, and Dr. G. Playfair, A.M.S., and Lieutenant J. A. Heathcote, of the Indian Navy, as members, was despatched at this time with instructions to explore the coasts of these islands, to examine how far they were adapted for the establishment of a convict station, and to select a suitable site for such a Settlement.

Leaving Calcutta on the 23rd November, and travelling *via* Moulmein, Dr. Mouat and his colleagues reached Port Cornwallis on the 11th December; they thence visited in succession Stewart's Sound, Long Island, Barren Island, Old Harbour, McPherson's Strait, Cinque Islands, Labyrinth Islands, Port Mouat, Port Campbell, Middle Strait, and finally Port Andaman, making careful observations at each of these localities, in the course of which many adventures with the aborigines occurred, the only untoward one being at the last stage of the expedition and on the last day of the old year, when an encounter provoked by the savages took place which resulted in a few of them being killed and wounded and one being taken captive.² The Commission returned to Calcutta early in the new year (1858), and at once submitted their report; they advocated the selection of Old Harbour as being admirably suited for the purposes of a penal Settlement, and suggested that the name of this harbour might be appropriately changed to "Port Blair," in honour of the distinguished hydrographer.

In recognition of the excellent services performed by the Commission the special thanks of the Supreme Government were

¹ The three chief incidents recorded and mentioned by Mouat are—1. The rendezvous at Port Cornwallis in 1824 of the fleet conveying the troops for the first Burmese war; 2. The visit and treacherous murder in 1839 of Dr. Helfer, a savant engaged in scientific researches; and 3. The extraordinary shipwreck in 1844 at Havelock Island of the troopships "Briton" and "Runnymede."

² This lad was taken to Calcutta, where he naturally excited great interest and curiosity. After a short detention he was conveyed back to the very spot which had witnessed his capture, but, owing to the kindness with which he had been treated, he appeared loth to part with his captors.

conferred upon Dr. Mouat and his colleagues for the judicious, prompt, and effectual manner in which they had carried out their instructions, and the business-like and practical shape in which they had embodied their investigations.

The Government lost no time in acting upon the recommendation of the Commission, and orders were at once sent to Captain (now General) H. Man, then on duty at Moulmein, to proceed to Port Blair and hoist the British Flag and take possession of the Andaman Islands in the name of the Honourable East India Company; before his return Captain Man was also to make arrangements for the immediate reception of a large party of convict mutineers whom it had been decided to transport thither without delay.

These instructions were duly carried into effect: the flag was hoisted on the 22nd January, and sixteen days later the first party of prisoners, numbering 200, arrived in charge of Dr. J. P. Walker, who had been appointed Superintendent of the new Settlement. During the first decade of the colony (1858–1867) the rate of mortality among the settlers was excessive, the annual average amounting to no less than 18·56 per cent., while in one year (1859) it will be seen from the annexed table to have reached the terrible figure of 63 per cent.

Year.	Death rate per cent.	Year.	Death rate per cent.
1858-59	16·00	1871-72	1·72
1859-60	63·00	1872-73	1·64
1860-61	13·40	1873-74	1·51
1861-62	14·25	1874-75	2·51
1862-63	15·53	1875-76	3·67
1863-64	21·55	1876-77	4·17
1864-65	14·64	1877-78	4·90
1865-66	6·57	1878-79	6·73
1866-67	10·56	1879-80	4·63
1867-68	10·16	1880-81	5·12
1868-69	3·9	1881-82	4·85
1869-70	2·0	1882-83	3·3
1870-71	1·2		

This extraordinary fatality was of course chiefly due to circumstances incidental to the establishment of a penal Settlement in an isolated tropical region peopled by hostile savages and covered by dense jungle largely fringed with mangrove, and rendered extremely malarious by numerous salt and fresh water swamps which are found throughout the group.

The necessity of clearing and occupying without loss of time

the most commanding localities in the fine harbour of Port Blair, and reclaiming as far as possible the contiguous swamps, naturally led to much sickness, which was aggravated by various other circumstances, of which the following were doubtless the chief :—

1. Transportation of a large number of prisoners unfit either to withstand the climate or to perform the work required of them under the exceptional circumstances in which they were then placed.
2. Want of sufficient nitrogenous food.
3. Absence of a sanatarium for the recovery of invalids.
4. Employment of convict labour on works of every kind throughout the year without respect to the suitability of the season for those involving exposure to malarious influences, as evidenced by the mortality in the rains having about trebled that of the dry months.
5. Difficulties experienced by working parties in consequence of the harassing attacks of the aborigines.

The above facts being at length recognised as calling for stringent measures of reform, active remedial steps were at once taken by the then recently appointed Superintendent,¹ with the remarkable result that the death rate suddenly fell from 10·16 in 1867 to 3·9 in 1868, while an average of 1·6 in the five following years, during which vast clearings of jungle and other important works were accomplished, testified to the vigour and success with which the wise and considerate system which had been inaugurated was carried on.

Prior to the formation of our Settlement in 1858, and for some years after, it is clearly shown, from the early records of our relations with the aborigines, that extreme jealousy and distrust prevailed among adjacent tribesmen, and even among scattered communities of the same tribe ; these feelings naturally resulted in restricting intercommunication, and it is therefore not surprising to find that in many cases no knowledge was possessed regarding tribes distant only fifteen or twenty miles.² Of the .*bōjig-n̄gī-jī*-, .*ākā-kēdē*-, .*ākā-jārō*-, and .*ākā-chāriār*- tribes, those living in South Andaman remained in ignorance till 1877, and it was not till 1879–80 that members of all the eight tribes of Great Andaman (*i.e.*, including the .*ākā-bal'awa*- of the Archipelago) were able to meet on friendly terms at the various Homes which had then been established for some years.

¹ Colonel (now General) H. Man.

² In 1875 it was found that the .*bōjig-n̄gī-jī*- (or South Andaman tribe) had only then recently discovered that Middle Andaman was not, as they had supposed, occupied entirely by the .*ākā bōjig-ydb-*, but that it was shared by another tribe called .*ākā-kōl-*; of the territory further north all they were able to say was that it was occupied by the .*yērewa-*, a people they seem to dread equally with the natives of Little Andaman.

From the very commencement of the new Settlement, as has been stated, serious difficulties had to be contended with in consequence of the harassing attacks on our working parties by the aborigines, whose cupidity was excited by the iron tools and other implements which in their eyes presented an appearance of adaptability as weapons of the chase; the Government Gardens they likewise freely robbed, until at length stern repressive measures had to be adopted whereby they were instructed for the first time in the laws of private property. A wholesome dread of our power having been duly instilled, efforts were made by Government with a view to the civilisation of the race and the establishment of a better understanding between ourselves and the original possessors of the soil. Homes were accordingly erected in the vicinity of the harbour, where all who needed might obtain protection, shelter, food, and medicine. This step, which was deemed the best, if not the only means of furthering one of the objects which had prompted the re-establishment of the colony—*i.e.*, of reclaiming the savages from their barbarous custom of murdering all strangers who approached their shores—effected a marked improvement in our relations with the tribes in South Andaman¹ by affording them convincing proof of our friendly intentions towards them, so that now, as Dr. Day has stated, “the convicts are left unmolested, the implements of agriculture are not stolen, the fishing stakes are left undisturbed, the gardens are no longer pillaged, runaway convicts have been recaptured, and shipwrecked sailors assisted.”

It must not, however, be supposed that these beneficial results were immediately obtained, for it could hardly be expected that the aborigines should at once believe in our goodwill towards them, or forget their resentment against the people who had taken possession of their fine harbour and ousted them from many of their favourite haunts; in process of time, however, the kind and judicious treatment they consistently met with, first from Rev. H. F. Corbyn, and during ten subsequent years from Mr. J. N. Homfray, had the desired effect, and they have learned not only to regard us with favour, but also to assist us in a variety of ways.

¹ Recently (July, 1883) four men and two women were forwarded to Calcutta for the purpose of being modelled for the International Exhibition; while there they were quartered for a few weeks in the Zoological Gardens, where they attracted great crowds of Bengalis, who had never before had an opportunity of seeing the people whom they are said to regard as the descendants of the Rakshasas (!) Circumstances proved that their Port Blair training had not been lost on these representatives of their race, for on being asked by their visitors for a souvenir in the shape of a lock of their corkscrew ringlets, they promptly demanded a rupee before granting the favour; and in like manner the pleasure of witnessing an Andaman dance was not to be obtained previous to some *ik-pū-ku*- (money, lit. “slices”) having been bestowed upon the performers!

To Mr. Homfray great credit is due for the zeal and energy he displayed in conciliating the members of the various tribes who visited the Homes : he spared neither time nor his private means in promoting their welfare and gratifying their wants, and so thoroughly identified himself with their concerns and interests as to gain their entire confidence and goodwill ; he also acquired a fair colloquial knowledge of the South Andaman language, but abandoned an attempt he made to form a vocabulary. As Mr. Homfray's labours may be fairly said to have paved the way, and rendered easier the task of conducting ethnological and philological researches among the aborigines, it is due to his memory that this slight acknowledgment should be here made of his good services.¹

The Homes have effected good by bringing together members of the various tribes, between whom the way has thus been paved for intermarriages, which were of course formerly of rare occurrence ; tribal feuds have also here been amicably arranged, while, through visits paid to Port Blair and other Homes by members of all the Great Andaman tribes, as well as by our visits in the station steamer to the more distant encampments, the knowledge of our power, resources, and kindly intentions has spread throughout their respective territories.

It cannot, however, be contended that our attempts to reclaim the Andamanese from their savage state have produced unmixed beneficial results, for it is found that in proportion as they gain in intelligence and tractability, the more fat and indolent do they become, and having no incentive towards exertion frequently lose in great measure their quondam skill in hunting ;—availing themselves of the privileges of free board and quarters, they spend their time for days together in singing, dancing, and feasting ; the spirit of independence becomes thus less conspicuous, as they learn to depend upon others for the supply of their daily requirements, instead of being compelled to make such provision for themselves. There can, moreover, be no doubt that the effect of our clearances of jungle has been prejudicial to the health of the aborigines, while the excessive tobacco-smoking² among members of both sexes, which has been unrestricted, has seriously undermined their already enfeebled constitutions. If the evil ended here there would be ground for regret, but a graver cause exists in the deterioration which has taken place in their morals through

¹ Mr. Homfray died suddenly at Port Blair on February 25th, 1883, after twenty years' service in the Settlement.

² It is pitiable to notice the evident disrelish and discomfort endured by one of these savages when first given a pipe of tobacco, yet from sheer determination to share an experience which has such apparent attractions for their compatriots they willingly undergo the misery of nausea for several days till they have habituated themselves to its use.

their unavoidable contact with the alien convict population, the lamentable consequences of which will be found under the head of "Pathology."¹ So widespread is the evil influence that has been exercised, that on no point probably will future writers differ so strongly as on the social and moral virtues of the Andamanese. I wish, therefore, to make it clear to my readers that my remarks and observations on all, and especially on these points, are restricted to those communities who have been found living in their primitive state, and who may therefore be fairly considered as representatives of the race, being unaffected by the virtues or vices of so-called civilisation.

The measure of success which was considered to have attended the establishment of the Homes suggested that further good might be effected by the formation of a school or Orphanage for the education of the younger members of the aboriginal population. Accordingly in 1866 a commencement was made with a few children who had been obtained by Mr. Homfray from their guardians or relatives, and who were now placed under the care of a matron on Ross Island, where the Orphanage was opened. In 1870 two ladies from the Kidderpore Asylum (Calcutta) undertook the charge of the Orphanage, in which there were at that time more than forty children of both sexes. For some months the nature of the instruction given was of course of the simplest, comprising chiefly habits of neatness and cleanliness, the alphabet, and a little needlework and basket-making. It soon became apparent that the children possessed much intelligence and were wonderfully apt with their fingers; they were also very amenable to discipline, and proved therefore in every respect extremely interesting and promising pupils, whose chief fault was found to be the not uncommon one of want of perseverance; nevertheless, during the first year's training the baskets made by the lads and disposed of locally realised Rs. 100, while the girls earned a further sum by their needlework and fancy articles, besides which they made up the clothing for the entire party.

After two or three years' labour in the Orphanage the Kidderpore ladies resigned the charge, and some difficulty was experienced in arranging for the retention of the girls; however some were finally taken by certain residents, who were desirous of training them as servants, while others were speedily married. With regard to the boys the question was less easy of solution, for it was found that those who had been taken in hand at too advanced an age began to pine for a return to their native jungles, and so intense did this desire become, that, in spite of meeting with every discouragement, they were discovered one morning to

¹ *Vide "Journ. Anthropol. Inst.", vol. xii, No. 40, p. 82.*

have settled the matter for themselves by swimming away from the island.

The problem as to how the lads trained in the so-called Orphanage shall be disposed of in some profitable manner has been partially solved by training them to serve as domestic servants ; but the question as to their marriage remains yet to be dealt with, for of all the girls originally trained in the Orphanage two only have continued in the Settlement, the other survivors having long since resumed the customs of their jungle homes. To encourage the marriage of the lads in question with girls brought up in the jungle, or even in one of the Homes, would probably result in re-associating, the former with those who—so strong is their general inclination towards a jungle life—would wean them from their civilised ways, thereby rendering abortive the many years' training bestowed upon them, and which has moreover unfitted them for the conditions of a savage home.

It has been ascertained that up to about the age of ten or eleven years these aborigines can hold their own with ordinary children of civilised races in respect to mental culture, but after that period further progress seems arrested. Some remarkable instances might be mentioned of boys and girls¹ who at no more than nine or ten years of age were able to read difficult passages from an Urdu book quite fluently, and explain the meaning of any word in ordinary use ; it would appear, however, that, physically speaking, training has a deteriorating effect, for of all the children who have passed through the Orphanage, probably not more than ten are alive at the present time, while of those that have been married, two or three only have become parents, and of their children not one has been reared. In respect to morality, too, it must be confessed that they have suffered from contact with the convict population.

And thus, though the Orphanage, like the Homes, has not accomplished all the good anticipated by its promoters, the kindness and interest taken in their little ones have undoubtedly contributed towards strengthening the friendly relations previously established between the aborigines and ourselves.

Friendly intercourse among the tribes has been of late years further encouraged and extended by visits paid in the station

¹ One of these girls (Ruth) was highly trained by Mrs. Homfray, and is able to speak, read, and write English, as well as to converse glibly in Hindustani. As she has been with us from infancy, it is hardly necessary to say that she is ignorant of her native tongue. Ruth is also an accomplished needlewoman, and is clever at making designs ; she wears the European costume, not excepting bonnets and hats. Some idea of the advance she has made on her fellow-countrymen (who are still in the stone age) may be gathered from the above statements, but further proof is found in the fact of her asking for and obtaining a Christmas card album from England, and some lace for the adornment of her dresses !

steamer to the more distant encampments by the officer in charge of the Homes¹ accompanied by males and females of the Southern tribes.² On these occasions dogs, iron, beads, and various other articles highly prized by the aborigines have been deposited in the huts from which the occupants had fled, or presented to such individuals as had courage to approach; stringent measures were at the same time taken to check the almost irresistible propensity of the *bō-jig-njū-ji-* to appropriate all portable property in the temporarily vacated camping grounds.

In these trips Little Andaman has been also visited, but all our efforts to conciliate the *järawa-* (or inhabitants of that island) with their offshoot in South Andaman have hitherto proved fruitless. This may in part be due to the summary punishment³ we have been compelled on two occasions to inflict for cruel murders perpetrated on inoffensive mariners; but it may also be attributable to the exclusiveness and hostility which appear as tribal peculiarities, and which are directed alike against their fellow savages and ourselves, as has been demonstrated by the terror with which they have in recent years inspired the South Andamanese, and in bygone years the Car-Nicobarese,⁴ on whom they were formerly in the habit of making raids for purposes of plunder. For a long time now, however, they have desisted from these predatory expeditions, and have confined themselves⁵ to the islands and localities which are regarded as their territory; but still, cases have occurred from time to time which keep alive the unpleasant conviction that any unfortunates who might be wrecked, or should venture to land on their coasts without sufficient means of self-defence, would be as mercilessly massacred now as at any date in their history.

The various measures already detailed as having been taken in order to benefit the aborigines have convinced all who have come within their influence of our friendly intentions; even the distant communities of Great Andaman are now becoming as

¹ An account of one of these visits will be found in the form of a private letter which was published in "Journ. Anthropol. Inst.," vol. vii.

² Experience has taught us that one of the most effective means of inspiring confidence when endeavouring to make acquaintance with these savages, is to show that we are accompanied by women, as they at once infer that whatever may be our intentions, they are at least not hostile.

³ A further possible cause of the continued disinclination of the *järawa-* to accept our advances is believed to be due to one or more runaway convicts, who may have succeeded in settling in their midst, and who in order to lessen their own chances of recapture and punishment, have given unfavourable accounts of us.

⁴ How the *järawa-* came to discover the distant low-lying island of Car-Nicobar is not known, but it is probably traceable to some trifling circumstance, such as the accidental drifting of a boat far out to sea.

⁵ *Vide* "Journ. Anthropol. Inst.," vol. xii, "Tribal Distribution," p. 98, and "Communications," p. 113.

well known and as favourably disposed towards us as are our immediate neighbours the *bōjig-ngīji-*, and we have every reason to believe that crews of vessels shipwrecked on any portion of the Great Andaman coast would not only escape molestation and attack, but would receive such assistance as it might be in the power of these savages to render. That their animosity in past years was not unfounded is attested by the reports of Captain Miller and Père Barbe, both of which will be found quoted at some length in the "Journal of the Anthropological Institute" for 1882-3, p. 339.

On referring to the map of the Andamans in the "Journal" of August, 1882 (Vol. II, p. 69), it will be seen that according to our present knowledge¹ the aboriginal inhabitants are divided into no less than nine tribes,² viz.:

<i>bōjig-ngīji-</i>	..	South Andaman.
<i>balawa-</i>	..	Archipelago.
<i>bōjig-yāb-</i>		
<i>ā-ko-jū-wai-</i>		Middle Andaman.
<i>ā-kā-ked'e-</i>		
<i>ā-kā-kōl-</i>		
<i>ā-kā-jāro-</i>		
<i>ā-kā-chāriar-</i>	..	North Andaman.
<i>jārawa-</i>	..	Inhabiting Little Andaman and southern portions of Great Andaman. ³

Although the *bōjig-ngīji-* are here shown, and in the following pages are described, as the natives of South Andaman—including Rutland and Labyrinth Island—there is no evidence to prove that they have ever been in undisputed possession of the whole of this territory; indeed, the scattered encampments of *jārawa-*, which are marked on the map as occupying certain portions within their territory give substance to the belief that before our advent they suffered from the inroads of their marauding neighbours, whose occupancy is proved to be of no recent date by the *jārawa* kitchen-middens,⁴ evidently of

¹ How erroneous were the views formerly held may be gathered from the following extracts:—"The Andamans . . . do not even exist in a state of tribedom" (Figuier). "They have no tribal distinctions" (Wood). "In Great Andaman there is only one tribe" (Mouat).

² These are the names by which they are designated by the *bōjig-ngīji-*, who, being our immediate neighbours, are the best known of all the tribes.

³ As these communities possess many, if not all, the characteristics of the inhabitants of Little Andaman, and are presumed to have had constant communication with them in past years, they are designated by the *bōjig-ngīji-* by the name of *jārawa*.

⁴ These are distinguished from those of the *bōjig-ngīji-* with readiness by members of the latter tribe, on account of the presence of the valves of certain molluscs, which they assert were never (according to tradition) considered as articles of diet by their own immediate ancestors.

remote origin, which are found in and near the harbour of Port Blair.

No one who has had the opportunity of seeing the natives of the various islands forming Great Andaman can fail to be struck with the similarity which marks their general appearance,¹ and to be convinced that, however much they may differ in many respects, they must at least claim a common origin. Any reasonable doubt on the subject has been removed by the discovery that although each of the several tribes possesses a distinct dialect, these are traceable to the same source, and are all in the same—*i.e.*, the agglutinative—stage of development; further, it has been ascertained that among all, or at least among the natives of Middle and South Andaman and the Archipelago, a coincidence of legends and customs is to be found, and that though the points of dissimilarity between the inhabitants of Great and Little Andaman are more marked, especially in regard to their weapons and implements, they are by no means such as would justify the belief that the latter are descendants of another branch of the Negrito family.

From what has been already said it will be understood that we are not yet in a position to decide whether one and the same dialect is spoken by all the communities designated as *järawa-*, or whether, like the people of North and Middle Andaman, they must be regarded on linguistic grounds as representing two or more tribes.

The dialects of Great Andaman may be grouped into three classes, viz.:—

- I. The *bō·jig-ngī·ji-* and *bal·awa-*.
- II. The *bō·jig-yāb-* and *ā·kā-kōl-* and *ō·ko-jū·wai-*.
- III. The *ā·kā-kēd'e-* and the two tribes of North Andaman.

But it must not be supposed that the similarity between the dialect of any of these groups is so great that a knowledge of one would enable a person to converse intelligibly with members of the other tribes in the same classification, for such is not the case; now, however, that intercommunication is less restricted it is not unusual to find that members of the various communities are sufficiently acquainted with the dialect spoken by their immediate neighbours as to hold intercourse with them.

Little which throws light on their past history can be gathered from the Andamanese or from their traditions, but from a study

¹ I have been told by the *bō·jig-ngī·ji-* that they can distinguish a *bal·awa-* from members of the other tribes by his high cheek-bones, and the shape of his skull, which they describe as more dolichocephalic than those of other tribesmen; but as this tribe is now well-nigh extinct, it is impossible to determine the amount of credence which may be placed on this strange statement.

of their kitchen-middens¹ it appears that they must have inhabited these islands, and have remained in much the same state of barbarism for a very considerable period.

On the assumption that the members of these tribes lived entirely on the coast, it was till recently believed that the kitchen-middens were always situated close to the sea-shore, and it was even said that the accident of their being found far inland would "indicate that some terrestrial changes in the islands have taken place." The incorrectness of this theory is beyond all question, as we have now ample evidence that not only on the coast, but also in the depth of the jungle, there are permanent encampments throughout the group, where we are assured many of these refuse heaps are to be found bearing traces which testify to the remoteness of their origin.

A change, however, appears to be gradually taking place in respect to the formation of these kitchen-middens, which is accounted for by the fact, that whereas in the olden days they were able to regard the slowly increasing heap with pride as witnessing to the success and skill in hunting and fishing of the community near whose encampment it was situated, nowadays all cause for boasting regarding their achievements is considered at an end in consequence of the material assistance they receive from the dogs we have given them, and the superiority (*sic*) of the weapons they have been able to manufacture from iron obtained from the Homes.

Various estimates have been hazarded as to the probable strength of the aboriginal population; but as no reliable data are procurable it is impossible to speak with any degree of certainty on the subject. From recent observations and the ascertained ravages of certain epidemics it seems hardly likely that the aggregate population of Great Andaman at the present day exceeds 2,000 souls, while the *järawa*, who inhabit Little Andaman and a few localities in Great Andaman, may perchance number from 1,000 to 1,500 more; amongst these communities the effect of our occupation cannot have had, as yet, the prejudicial influence which has unhappily resulted among the tribes of Great Andaman from contact with alien races, the causes of which, being noticed elsewhere, need not here be particularised, especially as they are chiefly such as have been found to follow

¹ Col. (now Gen.) H. Man was the first to open up the kitchen-middens in and near the harbour at Port Blair, and the late M. de Roepstorff subsequently devoted some time to their examination, but it does not appear that he has left any notes as to the result of his investigations; at present all that has been published on this subject is embodied in the late Dr. Stoliczka's paper "Note on the Kjökken-möddings of the Andaman Islands" (*vide* Proc. As. Soc. Bengal, January, 1870).

ever in the wake of civilisation to the extermination of the savage race.

In closing this paper it will not, I think, be devoid of interest, even to the general reader, if I append a few particulars regarding Port Blair as the centre of the great Indian penal Settlement.

A glance at the map will show that Port Blair is situated near the south-eastern extremity of Great Andaman, and consists of a fine harbour somewhat *F*-shaped, which extends over seven miles in a south-westerly direction; it contains three islands, Ross, Chatham, and Viper. The first of these, containing an area of about 80 acres, is situated in a commanding position at the mouth of the harbour, and has been the site of the headquarters of the Settlement since its re-establishment in March, 1858; the number of its residents ranges between 2,000 and 3,000, and includes the majority of the civil and military officers, the European troops, and detachments of native infantry and police; the residue consists chiefly of convicts. The Protestant church, Roman Catholic chapel, and a native Christian chapel are on this island.

The second island, Chatham, contains about 12 acres, and is situated midway between Ross and Viper, being visible to both at the bend of the harbour; its population numbers about 500, and is composed for the most part of hospital patients, convalescents, and convicts, who are employed on the steam saw-mills.

Viper, the third island, is about five miles distant by sea from Ross, from which it is hidden by the intervening hills on the so-called "mainland"; its area is slightly larger than that of Ross, but owing to its configuration is not so well adapted for building purposes; the majority of its inhabitants (usually numbering about 1,600 souls) are hospital patients, convalescents, and chain-gang prisoners, these last being confined in the only jail in the Settlement.

Mount Harriet¹ (about 1,100 feet), regarded as the sanitarium of Port Blair, is situated in a commanding position on the north side of the harbour near Chatham Island, and at the eastern extremity of a range of hills running in a northerly direction; its residents are composed of convalescents and weakly convicts and a party of police; round its base, on the western, eastern, and southern sides, various large clearings have been established, barracks and workshops erected, and cultivation and grazing carried on. Similar and more recent clearings exist between Mount Harriet and Port Mouat, where the narrow isthmus (1½ miles wide) dividing the two harbours, though so far distant

¹ It was at the foot of this hill on a dark evening in February, 1872, that the late Earl Mayo, then Viceroy of India, was assassinated (when about to return to the flagship) by an Afridi convict.

from headquarters, was opened up two or three years prior to the important head-land situated between Ross and Viper Islands.

On the other side of Port Mouat, in a south-easterly direction further tracts of land have been cleared and placed under cultivation connecting that part of the Settlement with the principal clearings in Port Blair, known as the Southern District, being that portion of the mainland which lies west and south-west of Ross Island, where two-thirds of all the self-supporting prisoners and more than half the entire convict population are located.

The cultivation of paddy, sugar-cane, Indian corn, fruits, and vegetables, affords occupation to a large number (at present about 1,500) of a self-supporting population, and further industries of this nature have been opened up—chiefly by means of Government labour—by establishing plantations of cocoanut, tea, Liberian coffee, cacao, nutmeg, limes, arrowroot, *Musa textilis*, India-rubber (*Ceara* and *Hevea*), tapioca, indigo, and vanilla, all of which promise to repay well the care bestowed upon them. Cotton and tobacco have likewise been tried; the cultivation of the former was discontinued long since, apparently on account of the inability of the plants to survive the dry season without great expenditure of labour for watering; with regard to the latter, as failure was due only to ignorance of the proper method of curing the leaves, renewed experiments are being made.

The aggregate population at the present day amounts to about 15,000 of all races; nearly four-fifths of this number, as will be shortly shown, include the convict element, which is distributed among some thirty scattered stations and a like number of villages throughout the entire cleared area; the penal Settlement is thus shown to extend all round the harbour, and to embrace the land at Port Mouat on the west coast.

Following the course of the main road, which now encircles the harbour, a distance of about forty miles would be traversed from its north-eastern extremity to its southern end opposite Ross Island; the number of roads intersecting the Settlement and connecting its various parts is of course considerable, and the importance of keeping them at all times in thorough repair is fully recognised, as is shown by the amount of labour annually devoted for this purpose. In connection with this subject it may be added that intercommunication between the most important points in the harbour has been greatly facilitated in recent years by the establishment of signalling posts at the principal police stations, so that messages can be semagraphed at any hour of the day or night, a matter of no small advantage in cases of emergency so liable to occur in a penal Settlement.

Although the aggregate of the convict population appears large

and capable of ensuring a vast amount of progress in the development of the resources of the country, allowances must be made for the fact of there being but a handful of free servants and labourers in the colony, which necessitates the employment of prisoners in every department; very large deductions have, therefore, to be made on account of those who are ineligible for other than departmental or routine duty, or who from any other cause are not available for Settlement works. This will be better understood when it is explained that about 1,000 men are employed in the Commissariat, Medical, Marine, and Forest Departments; that the self-supporters and servants number about 3,000; hospital patients, the infirm and aged about 1,200; jail servants (or petty officers) about 720; those engaged in manufacturing clothing, in grinding wheat, and in miscellaneous industries 1,400; while of the remaining 4,000 about one-third are required for fixed establishments at the various stations and for conservancy arrangements, the residue being distributed among a vast number of works in all parts of the Settlement.

As in consequence of the continual drain among the self-supporting population on account of deaths and releases their numbers are but slowly increased by the addition of prisoners promoted from the labouring ranks, it must at the present rate of progress be long ere the desire can be realised of the Settlement producing the amount of its requirements even in the one item of rice, while it is certain that wheat, chenna, potatoes, and various other articles of daily consumption—for the cultivation of which the climate is ill-adapted—will always have to be imported; but as a set-off against these it may not be in vain to hope that the day will come when the surplus produce of our cocoanut, tea, Liberian coffee, cacao, nutmeg, and other plantations, together with our exports of timber, will afford substantial compensation by the sums realised in the Indian and home markets. The present average annual cost to Government of every transported convict is believed to amount to about Rs. 105. In proportion as the measures taken to develop the resources and increase the revenue of the Settlement mature, this heavy charge may be reasonably expected to diminish to a material extent.

On PHœNICIAN INTERCOURSE WITH POLYNESIA.

By S. M. CURL, M.D.

(Read on June 24th, 1884.)

HAVING for some time past been gathering available materials with a view to studying the history of Australasia and the islands in the Pacific Ocean, Polynesia, Melanesia, and the Malayan islands, the evidence has accumulated which makes it an established fact, in my mind, that much more intercourse than is generally supposed took place in very ancient times between the continents of Africa, Asia, and America, and the islands lying in the seas and oceans separating these continents.

And the evidences are continually accumulating which prove that not from one centre alone were these islands peopled, but that they received colonists and traders from many different countries. And while these investigations were going on, another set of facts came out clearly which demonstrated that the ancient history of the older peoples would yet have to be re-written, and then it would be seen, when this history was prepared and printed, that much which is now obscure would then be comprehensible.

But to carry out properly these inquiries I found it would be necessary to study the more ancient writings and languages of the older world; this being done, there came the lights that were wanting, and it was then visible how the people of the earlier times had sailed, traded, colonised, and migrated over great distances of land and ocean.

During the period between 1300–1000 B.C. we find numerous accounts of the Phœnicians sailing down the Red Sea, about the Persian Gulf, over the Indian Ocean, trading around Hindustan, and onwards to what we now know as the Malay islands and seas. There they left their words and written characters, in the neighbourhood of their trading posts. And from this time downwards they continued to trade with Hindustan and Malaysia until the decay of their power. During the time of Necho the Egyptian monarch they made a voyage for him through the Red Sea, round Africa, and home by the Mediterranean.

It will be seen by a comparison of the Rejang alphabet with the English equivalents and values, and the old Phœnician characters and their English values, how these stand in relation to each other. The Lampung characters are somewhat similar to the Rejang characters, but not so carefully made, or showing such a refinement of detail as to have fine or coarse lines made in writing them as in the Rejang, the Rejang thus showing an

advance in the care with which it was written and constructed. It will also be perceived how much more like the characters on bamboo tablets the Lampong is than the Rejang; and if we now turn to examine the similarities between these Sumatran characters and those known as the Phœnician, a critical study of them will enable us to learn at about what time the intercourse between these people took place, so as to enable the one people to transmit their written characters to the other, in the form in which the two sets of characters are found now to most resemble each other.

In the three most ancient forms of the Phœnician with which I am acquainted, there are only to be found certain forms of characters that are comparable with the Sumatran characters, and in these few the resemblance is not very close. But as time and circumstances modify the form of the Phœnician, and at the times when they have given letters to the older Hebrews, we find still greater resemblances: when we come still further down the stream of time, and examine the form of the letters the earliest Greeks got from their Phœnician teachers the resemblance becomes yet closer; and if we examine the Punic characters, as they were written at Carthage in the third century B.C., we shall discover how the Phœnician characters had then been modified. These, and the many other variations and changes that the Phœnician went through as it came past the descending centuries, will enable us to fix the date of the intercourse, trading, and colonisation of the peoples who wrote in these characters and imparted them to the inhabitants of the Malayan lands; and as it would occupy too much space here to exhibit the evidence that would establish this, and as that will be fully set out in my work on these matters, it is merely necessary to state that the evidence shows that in very early times this intercourse went on and continued to times after the Christian era, and that during this protracted period, Shemite, Aryan, Dravidian, Cushite, Egyptian, and Edomite peoples were in communication, and that through Malaysia, Barata, and Mesopotamia intercourse was held with the Papuan, Melanesian, and Polynesian peoples in "the isles of the sea."

ANTHROPOLOGICAL MISCELLANEA.

SOME RESULTS OF THE ANTHROPOMETRIC LABORATORY.

By FRANCIS GALTON, F.R.S.

(See the *Memoir* by the same Author at page 205.)

THE value of the results obtained at the laboratory may be questioned on the ground that the persons who applied to be measured were not random specimens of the crowd who visited the Exhibition, and that the latter themselves were no fair sample of the British population, nor of any well-defined section of it. I have no reply to make to this objection, except that it should not be pushed unreasonably far. On the other hand, it may justly be claimed that results which, taken each by itself, have no great value as absolute determinations, may nevertheless be of considerable importance relatively to one another, by affording materials for testing the relations between various bodily faculties and the influences of occupation and birthplace. Their discussion in any form is a laborious task, and the portion of it that I now submit is very far indeed from exhausting the uses to which the laboratory records can be put. It deals mostly with the very results that I have just spoken of as being the least valuable; but I have taken them in hand first, because it was a necessary preliminary to any further discussion. I also wished to utilise the copious material at my disposal to exemplify what I trust will be found a convenient development of a method of statistical treatment I have long advocated, by presenting in a compact and methodical form (Table II) a great deal more concerning the distribution of the measurements of man than has hitherto been attempted in a numerical form.

The following brief summary of maximum measurements will be interesting:—

9,337 persons were measured, of whom 4,726 were adult males, and 1,657 adult females. The highest records during the whole time that the laboratory was open were those shown in Table I.

TABLE I.

	Highest recorded cases among	
	4,726 Adult Males.	1,657 Adult Females.
Height without shoes, in inches	79·5	70·3
Weight, in lbs.	308	222
Breathing capacity, in cubic inches.. ..	354	270
Strength of pull, in lbs.	148	89
Strength of squeeze, in lbs.	112	86
Swiftness of blow, in feet per second ..	29	20
Sight distance, in inches, of reading dia- mond test-type	39	40

The meaning of Table II, and that of the new word "percentile" which is defined in the heading to that Table, will be understood by the help of a single example, for which I will take the line referring to Strength of Squeeze among males. We see that a discussion was made of 519 measurements in that respect, of men whose ages ranged between 23 and 26; that 95 per cent. of them were able to exert a squeeze with their strongest hand (the squeeze was measured by a spring dynamometer) that surpassed 67 lbs. of pressure; that 90 per cent. could exert one that surpassed 71; 80 per cent. one that surpassed 76; and so on. The value which 50 per cent. exceeded, and 50 per cent. fell short of, is the Median Value, or the 50th per-centile, and this is practically the same as the Mean Value; its amount is 85 lbs. This line of the Table consequently presents an exact and very complete account of the distribution of strength in one respect among the middle 90 per cent. of any group of males of the tabular ages similar to those who were measured at the laboratory. The 5 per cent. lowest and the 5 per cent. highest cannot be derived directly from it, but their values may be approximately inferred from the run of the tabular figures, supplemented by such deductions as the Law of Error may encourage us to draw. Those who wish to apply this law will note that the "probable error" is half the difference between the 25th and the 75th per-centile, which can easily be found by interpolation, and they will draw the per-centiles that correspond respectively to the median value *minus* twice, three times, and three-and-a-half times the probable error, at the graduations 8·7, 2·4, 0·8, and those that correspond to the median value *plus* those amounts, at the graduations 91·3, 97·6, and 99·2. The Table is a mere statement of observed fact; there is no theory whatever involved in its construction, beyond simple interpolations between values that differ little from one another and which have been found to run in very regular series.

TABLE II.—ANTHROPOMETRIC PER-CENTILES.

Values surpassed, and Values unreach'd, by various percentages of the persons measured at the Anthropometric Laboratory in the late International Health Exhibition.
 (The value that is unreach'd by n per cent. of any large group of measurements, and surpass'd by 100- n of them, is called its n th per-centile.)

Subject of measurement.	Age.	Unit of measurement.	Sex.	No. of persons in the group.	Values surpassed by per-cent. as below.					Values unreach'd by per-cent. as below.					
					95	90	80	70	60	50	40	30	20	10	5
Height, standing; with-out shoes ...	23-51	Inches {	M. F.	811 770	63·2 69·9	64·5 61·3	65·8 62·1	66·5 62·7	67·3 63·3	68·5 63·9	69·2 64·6	70·0 66·3	71·3 66·4	72·4 67·3	
Height, sitting, from seat of chair ...	23-51	Inches {	M. F.	1013 775	33·6 31·8	34·2 32·3	34·9 32·9	35·3 33·9	35·4 33·6	36·0 33·9	36·3 34·2	36·7 34·6	37·1 34·9	37·7 35·6	38·2 36·0
Span of arms ...	23-51	Inches {	M. F.	811 770	65·0 68·6	66·1 60·7	67·2 61·7	68·2 62·4	69·0 63·0	69·9 63·7	70·6 64·5	71·4 65·4	72·3 66·7	73·6 68·0	74·8 68·0
Weight in ordinary indoor clothes ...	23-26	Pounds {	M. F.	620 276	121 102	125 105	131 110	135 114	139 118	143 122	147 129	150 132	156 136	165 142	172 149
Breathing capacity ...	23-26	Cubic Inches {	M. F.	212 277	161 92	177 102	187 115	199 124	211 131	219 138	226 144	236 151	248 164	277 177	290 186
Strength of pull as archer with bow ...	23-26	Pounds {	M. F.	519 276	56 30	60 32	64 34	68 36	71 38	74 40	77 42	80 44	82 47	89 51	96 54
Strength of squeeze with strongest hand ...	23-26	Pounds {	M. F.	519 276	67 36	71 39	76 43	82 47	85 52	88 55	91 58	95 62	100 67	104 72	104 72
Swiftness of blow ...	23-26	Feet per second {	M. F.	516 271	18·2 9·2	14·1 10·1	16·2 11·3	17·3 12·1	18·1 12·8	19·1 13·4	20·0 14·0	20·9 14·5	22·3 15·1	23·6 16·3	23·6 16·9
Sight, keenness of—by distance of reading diamond test-type ...	23-26	Inches {	M. F.	398 433	13 10	17 12	20 16	22 19	23 22	25 24	26 26	28 27	30 29	32 31	34 32

It may be used in many ways. Suppose, for example, that a man of the tabular age, viz., above 23 and under 26, and who could exert a squeeze of 80 lbs., desired to know his rank among the rest, the Table tells him at once that his strength in this respect certainly exceeds that of 30 per cent. of those who were measured, because if it had been only 79 lbs. it would have done so. It also tells him that his strength does not exceed that of 40 per cent. of the rest, since it would have required a pressure of 82 lbs. to have done this. He therefore ranks between the 30th and the 40th per-centile, and a very simple mental sum in proportion shows his place to be about the 33rd or 34th in a class of 100.

The Table exhibits in a very striking way the differences between the two sexes. The 5th male per-centile of strength of squeeze is equal to the 90th female per-centile, which is nearly but not quite the same as saying that the man who ranks 5th from the bottom of a class of 100 males would rank 10th from the top in a class of 100 females. The small difference between the two forms of expression will be explained further on. If the male per-centiles of strength of squeeze are plotted on ruled paper, beginning with the lowest, and if the female per-centiles are plotted on the same paper, beginning with the highest, the curves joining their respective tops will be found to intersect at the 7th per-centile, which is the value that 7 of the females and 93 of the males just surpass. Therefore, if we wished to select the 100 strongest individuals out of two groups, one consisting of 100 males chosen at random, and the other of 100 females, we should take the 100 males and draft out the 7 weakest of them, and draft in the 7 strongest females. Very powerful women exist, but happily perhaps for the repose of the other sex, such gifted women are rare. Out of 1,657 adult females of various ages measured at the laboratory, we have already seen that the strongest could only exert a squeeze of 86 lbs., or about that of a medium man. The population of England hardly contains enough material to form even a few regiments of efficient Amazons.

The various measurements of males surpass those of females in very different degrees, but in nearly every particular. A convenient way of comparing them in each case is that which I have just adopted, of finding the per-centile which has the same value when reckoned from the lower end of the male series, and from the higher end of the female series. When this has been done, the position of the per-centiles arranged in order of their magnitude are as follows:—Pull, 4; Squeeze, 7; Breathing capacity, 10; Height, 14; Weight, 26; Swiftness of blow, 26; Keenness of sight, 37. We conclude from them that the female differs from the male more conspicuously in strength than in any other particular, and therefore that the commonly used epithet of “the weaker sex” is peculiarly appropriate.

The Table was constructed as follows:—I had groups of appropriate cases extracted for me from the duplicate records by Mr. J. Henry Young, of the General Register Office. I did not care to

have the records exhausted, but requested him to take as many as seemed in each case to be sufficient to give a trustworthy result for these and certain other purposes to which I desired to apply them. The precise number was determined by accidental matters of detail that in no way implied a selection of the measurements. The summarised form in which I finally took them in hand is shown in the two upper lines of the following specimen :—

Height, Sitting, of Female Adults, aged 23-50, in inches.

29-	30-	31-	32-	33-	34-	35-	36-	37-	Total
2	8	52	116	226	227	108	31	5	775
2	10	62	178	404	631	739	770	775	Abscissæ 0 to 775
30	31	32	33	34	35	36	37	38	Corresponding Ordinates.

The meaning of the two upper lines is that in a total of 775 observations there were 2 cases measuring 29 and under 30 inches, 8 cases measuring 30 and under 31 inches, and so on. The third line contains the sums of the entries in the second line reckoned from the beginning, and is to be read as follows :—2 cases under 30 inches, 10 cases ($=2+8$) under 31 inches, 62 cases ($=2+8+52$) under 32 inches, and so on.

I plotted these 775 cases on French "sectional" paper, which is procurable in long and inexpensive rolls, ruled crossways by lines 1 millimetre apart. I counted the first line as 0° and the 776th as 775° . Supposing the measurements to have been plotted in the order of their magnitude, in succession between these lines, the first would stand between 0° and 1° , the second between 1° and 2° , and so on. Now we see from the Table that the second measurement was just short of 30 inches, consequently the third measurement was presumably just beyond it, therefore the abscissa whose value is 2° , and which separates the second from the third measurement, may fairly be taken to represent the abscissa of the ordinate that is equal to 30 inches exactly. Similarly, the abscissa whose value is 10° divides the measurement that is just under 31 inches from that which is presumably just above it, and may be taken as the abscissa to that ordinate whose precise value is 31° , and so on for the rest. The fourth line of the Table gives the ordinates thus determined for the abscissæ whose values are entered above them in the third line. I dotted the values of these ordinates in their right places on the sectional paper, and joined the dots with a line, which in every case, except the breathing capacity, fell into a

strikingly regular curve. (I shall speak further on about this one partial exception.) Per-centiles were then drawn to the curve, corresponding to abscissæ that were respectively 5 per cent., 10 per cent., 20 per cent., &c., of the length of the base line. As the length of the base line was 275, these per-centiles stood at the graduations $13\cdot8^{\circ}$, $27\cdot5^{\circ}$, $55\cdot0^{\circ}$, &c. Their values, as read off on the sectional paper, are those which I have given in the Table.

It will be understood after a little reflection that the 9th rank in a row of 10, the 90th rank in a row of 100, and the 900th rank in a row of 1000, are not identical, and that none of them are identical with the 90th per-centile. There must always be the difference of one half-place between the post which each person occupies in a row of n individuals, numbered from 1 to n , and that of the corresponding graduation of the base on which he stands, and which bears the same nominal value, because the graduations are numbered from 0 to n and begin at a point one half-place short of the first man, and end at one half-place beyond the last man. Consequently the graduations corresponding to the posts of the 9th, 90th, and 900th man in the above example, refer to the distance of those posts from the beginning at 0 of their several base lines, and those distances are related to the lengths of the base lines in the proportions of $8\cdot5 : 10$, of $89\cdot5 : 100$, and of $899\cdot5 : 1000$, which when reckoned in per-cent. of the several base lines are 85, 89·5, and 89·95 respectively. The larger the number of places in the series, the more insignificant does this half-place become. Moreover, the intrusion of each fresh observation into the series separates its neighbours by almost double that amount, and propagates a disturbance that reaches to either end, though it is diminished to almost nothing by the time it has arrived there. We may therefore ignore the existence of this theoretically troublesome half-place in our ordinary statistical work.

There is a latent source of error that might affect such statistics as these, as well as many others that are drawn up in the usual way, which has not, so far as I know, been recognised, and which deserves attention. It is due to uncertainty as to the precise meaning of such headings as 30-, 31-, &c. If the measurements, no matter whether they were made carefully or carelessly, are read off from the instruments with great nicety, then a reading such as 30·99 would fall in the column 30-, and the mean of all the entries in such a column might fairly be referred to a mean value of 3·50.

But if the instruments are roughly read, say to the nearest half inch, the reading of a real instrumental value of 30·99, and even that of a real value of 30·76, would both be entered in the column 31-. The column 30- would then contain measurements whose real instrumental values ranged between 29·75 and 30·75, and the column 31- would contain those that ranged between 30·75 and 31·75; consequently, the means of all the entries in those columns

respectively should be referred, not to 30·5 and 31·5, but to 30·25 and to 31·25. Thus an error of a quarter of an inch in the final results might easily be occasioned by the neglect to note and allow for the degree of minuteness with which the instruments were read. No multiplication of measurements would get rid of it, neither would any increase of care in setting the instruments nor any increase in their accuracy. The error of which I speak is purely dependent on the degree of minuteness with which the instruments are read off. I strongly suspect that many statistical tables are affected by this generally unrecognised cause of error. The measurements at my laboratory were read to the nearest tenth of an inch and to a fraction of a pound, so I can afford to disregard this consideration. There was, however, a slight bias in favour of entering round numbers, which should have been, but were not (because I neglected to give the necessary instructions), rateably divided between the columns on either side.

I will now make a few remarks upon the measurements severally, and give some extracts from the numerous MS. tables already prepared, which I propose ultimately to present to the Anthropological Institute, together with the original laboratory records. They will form a valuable addition to those now in their possession, made by the Anthropometric Committee of the British Association, if utilised in connection with future inquiries into the influences of occupation and birthplace.

HEIGHT, STANDING and SITTING, and SPAN of ARMS in ADULTS.

A compendious view of the chief linear measurements of the persons examined is afforded by the three data: (1) height standing (without shoes); (2) height when sitting, measured upwards from the seat of the chair; (3) the span of the extended arms measured from the extreme finger tips. From these we can infer with approximate and adequate accuracy the lengths of the trunk, legs, and arms, and the proportion they severally bear to the total stature.

Height Sitting, and Span.

The ratio between height sitting and span varies as is well known during the period of growth, and is different in tall and short adults. The following table shows the relation between the two in persons of both sexes of approximately medium stature, who are between the ages of 23 and 51.

HEIGHT SITTING.			SPAN.		
Inches.	Males. Height 5 feet $8\frac{1}{2}$ inches.	Females. Height 5 feet $3\frac{1}{2}$ inches.	Inches.	Males. Height 5 feet $8\frac{1}{2}$ inches.	Females. Height 5 feet $3\frac{1}{2}$ inches.
31-	..	1	60-	..	3
32-	..	7	61-	..	4
33-	..	39	62-	..	31
34-	4	42	63-	..	23
35-	31	11	64-	..	19
36-	44	..	65-	1	10
37-	19	..	66-	2	3
38-	2	..	67-	3	..
..	..	..	68-	12	..
..	..	..	69-	18	..
..	..	..	70-	27	..
..	..	..	71-	22	..
..	..	..	72-	10	..
..	..	..	73-	3	..
..	..	..	74-	1	..
..	..	..	75-	1	..
	100	100		100	100

Height, Sitting and Standing.

As regards the ratio between height sitting and standing, it does not appear that a moderate increase of tallness in males is associated with a disproportionate increase of length of legs, the ratio of height sitting to height standing being uniform up to 6 feet or more. Its value is 54 : 100; in other words, the ratio of their legs to their trunk is 46 to 54 or thereabouts. When the stature exceeds 6 feet, the length of the legs as compared to that of the trunk increases notably; but my cases are too few to warrant a numerical estimate. As regards females, the case is curiously different. Here an increase of stature is from first to last accompanied by an increase of the length of legs as compared to that of trunk. The data calculated as above are as follows:—For a female stature of 4 feet $10\frac{1}{2}$ inches it is as 45 : 55, for 5 feet $2\frac{1}{2}$ inches 46 : 50, and for 5 feet $6\frac{1}{2}$ inches it is as 47 : 53. As regards taller females, my data distinctly point to a rapid progression in the rate of increase of the relation in question.

Weight.

As regards weight, I have nothing more to say at present.

Breathing Capacity.

The returns show a remarkable regularity in the alteration of the breathing capacity as life advances. It increases rapidly in early youth, and becomes stationary between the ages of 20 and 30

or a little later, and thenceforward steadily declines. I have already alluded to the existence of some irregularity in the run of the per-centiles of breathing capacity, in adults aged from 23 to 51. This is chiefly due, I think, to an unequal representation of the various ages between those limits, and to the somewhat irregular mixture of town and country folk, and of sedentary and active professions among the persons measured.

The following brief abstract gives a very fair epitome of the returns:—

AVERAGE BREATHING CAPACITY

(in cubic inches).

Ages.	Males.	Females.
10	135	121
15	199	138
20	216	142
25	217	137
30	213	137
35	211	136
40	203	123
45	194	119
50	191	118
55	178	111

The superior breathing capacity of the male is partly related to his stature and bulk; it is little in excess of that of females in early life, but becomes half as great again at the age of 20, and that large ratio is more than maintained throughout the whole of the after life.

Strength of Pull and Squeeze in Adults.

The strength of squeeze, as indicated by the instrument, does not keep ahead of that of pull at the highest end of the scale. The difference between them falls off, and is even reversed in the higher figures. I ascribe this wholly to the fault of the instrument, which does not permit the hand to act throughout with the same advantage. The more nearly it squeezes the bars together, the more it closes upon itself, and the less advantageously do the muscles act. It is easy to contrive an adjustment that might offer a similar grip in all cases, but it is not easy to construct one that shall act without additional loss of time. I have thought of a grip that should be forced by a steady increasing pressure, the strain at the moment of forcing it being registered automatically.

Strength of the Right and Left Hands.

I had a batch of about 500 cases of males between the ages of 23 and 51 analysed to determine the relative strength of the right and left hands. Out of every 100 cases about 50 had the right hand strongest; 20, or rather more, had the left hand strongest; and in 30 the strength was the same. A single line out of the table will give a good idea of the whole. The total of the cases to which it refers was only 82, but for the convenience of percentages I have raised it to 100.

	Squeeze of the left hand (in lbs.)										Total cases.	
	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-		
Squeeze of the right hand (in lbs.)	75-80.	1	1	6	9	26	27	21	6	2	1	100

On the average of all the cases the left hand appears to be about 6 per cent. weaker than the right hand.

While the figures were accessible, I thought it as well to see if by chance there existed any relation between the superior strength of the right or left hand and the superior reading power, as explained farther on, of the right or left eye. There was absolutely none. Had I had means to compare the inferior skill of the right or left hand, which I had not, the existence of some relation would be less improbable.

Strength of Squeeze and Breathing Capacity.

I was surprised to find that there is no close relation between strength of squeeze and breathing capacity. As the measurements are peculiarly trustworthy, being all made with the same instruments and by the same observers, I give the records in full to establish the fact. The importance of a large breathing capacity to a man who expends force rapidly, as to a runner or a mountain climber, is undoubted, but for a strain of short duration it seems comparatively non-essential. Still, I should have thought it to have been more nearly connected with every form of strength than it is. The table shows that an increase of breathing capacity from 150 to 300 inches is accompanied by an increase of strength of squeeze from an average of 75 lbs. to not more than 92 lbs. That is to say, when the breathing capacity is double, the strength of squeeze is on the average only one quarter greater.

BREATHING CAPACITY AND STRONGEST SQUEEZE.—Males, age 23, 24, and 25.

Anthropological Miscellanea.

285

Strongest Squeeze in Lbs.													Total.				
Breathing capacity.	Cubic inches.	45-	50-	55-	60-	65-	70-	75-	80-	85-	90-	95-	100-	105-	110-	115-	
70-80	1
100	1
110	2
120	3
130	9
140	15
150	22
160	44
170	32
180	49
190	51
200	65
210	48
220	29
230	23
240	15
250	17
260	20
270	18
280	3
290	1
300	3
310	1
320	3
330	1
340	1
..	5	9	26	49	80	88	91	67	60	28	14	5	..	522	

Eyesight.

The light at the laboratory was rarely sufficient, and it was very variable, since the tests were carried on partly in the daytime, partly when the light was waning, and partly during the evening illumination. The absolute results are therefore of little importance, though they are worth recording, namely, that one quarter of the males of various ages who were able to read small print at all without glasses, were able with one eye to read pages taken from the well-known little shilling prayer-book, printed in diamond type, at a greater distance than 27 inches, one-half of them at a greater distance than 22 inches, and three-quarters at a greater distance than 18 inches. No person at the laboratory succeeded in reading a page further off than 38 inches, though one lady at my own house, probably under better light and using both her eyes, unmistakably exceeded 41 inches.

Though the tests are of little importance absolutely, they are of much value relatively in comparing the power of the two eyes, as to whether on the whole the right eye is stronger than the left, or *vice versa*, and what is the average difference between their powers. It appeared from an examination of about 850 cases that the number of those whose two eyes were equally effective bore the ratio of 2 to 3 (or a very little more than 3) to the number of those in whom the powers of the two eyes differed to a notable degree. It also appeared, on taking the average of all the 850 cases, that the difference between the greatest reading distance of the two eyes with the above test type, was just 2 inches (or the merest trifle less). And lastly, it appeared that the average strength of the right and of the left eyes was almost exactly the same. Thus with the right eye there were 253 cases in which the greatest reading distance lay between 20 and 24 inches, and with the left eye there were 256 such cases; again, when the greatest distances lay between 25 and 29 inches, the cases were 229 and 224 respectively.

I have nothing of novelty to say regarding the colour sense, as the data, although they have been tabulated, have not yet been discussed.

Highest Note Audible.

The measurements were made with five whistles set to emit 10, 20, 30, 40, and 50 thousand vibrations per second respectively. Notwithstanding the roughness of the measurements, the results fall into a very fair curve; however, it would be hardly justifiable to give per-centiles, because the values on which the curve is based are wide apart. I therefore limit myself to giving a table of the actual observations reduced to percentages for the convenience of comparison. It will be seen here, as in every other faculty that has been discussed, the male surpasses the female; 18 per cent. of the males hear the shrillest test-note, as against 11 per cent. of the

females, and 34 per cent. of the males hear the next shrillest test-note, as against 28 per cent. of the females.

Ages.	Percentage of cases in which the under-mentioned number of vibrations were perceived as a musical note.				Number of Cases.	
	Number of vibrations per second.					
	20,000	30,000	40,000	50,000		
Males. . {	23-26	99	96	34	18	206
	40-50	100	70	13	4	317
Females {	23-26	100	94	28	11	176
	40-50	100	63	8	1	284

On COMPOSITE PHOTOGRAPHS of SKULLS.

By DR. BILLINGS, Curator, Army Medical Museum, United States.

(Extracts from a letter to Mr. F. Galton, relating to the Photographs exhibited at the Meeting of the Institute on November 11th, 1884.)

"WAR DEPARTMENT, SURVEYOR-GENERAL'S OFFICE,
"WASHINGTON, D.C., October 28th, 1884.

"I have the honour to forward to you by mail to-day a few specimens of composite photographs illustrating the application of your suggestion of that mode of illustration to the subject of craniology. These composites have been made directly from the crania themselves, and not by combining different photographs. I have satisfied myself that this method bids fair to be of great importance in craniological studies, permitting a comparison of crania in different collections more satisfactorily than any system of measurements which has yet been devised.¹

"JOHN S. BILLINGS,
"Surgeon U.S. Army."

LIST OF PHOTOGRAPHS SENT.

Composite photograph of seven adult male *Sandwich Islanders' Skulls*, side view; Nos. 425, 444, 442, 445, 446, 438, 286, Section IV, a.m.m. Wet process, exposure 70 seconds.

¹ See Memoir by Mr. Galton, "On the Application of Composite Portraiture to Anthropological Purposes." Report of the British Association, 1881, p. 690.

Composite photograph of seven adult male *Sandwich Islanders' Skulls*, front view; Nos. 425, 444, 442, 445, 446, 438, 286, Section IV, a.m.m. Wet process, exposure 70 seconds.

Composite photograph of seven adult *Negro Skulls*, front view; Nos. 980, 411, 955, 949, 953, 979 954, Section IV, a.m.m. Beebe's gelatin dry plate, exposure 3 seconds.

Composite photograph of eight male *Ponca Indian Skulls* (adult), side view; Nos. 836, 837, 835, 834, 831, 487, 486, 877, Section IV, a.m.m. Beebe's gelatin dry plate, exposure 3 seconds.

Composite photograph of eight male adult *Ponca Indian Skulls*, front view; Nos. 836, 837, 835, 834, 831, 487, 486, 877, Section IV, a.m.m. Beebe's gelatin dry plate, exposure 3 seconds.

Composite photograph of seven adult male *White Skulls*, Nos. 6306¹, 7023, 6305, Section I; 63, 2118, 2119, 38, Section IV, front view. Beebe's gelatin dry plate, exposure 3 seconds.

Composite photograph of seven adult male *White Skulls*, Nos. 6306¹, 7023, 6305, Section I; 63, 2118, 2119, 38, Section IV, a.m.m. side view. Beebe's gelatin dry plate, exposure 3 seconds.

Composite photograph of eighteen adult male *Cheyenne Indian Skulls*, Nos. 5560, 6525, Section I; 526, 2061, 528, 8, 715, 149, 146, 150, 1762, 9, 913, 464, 2121, 2090, 2035, 773, Section IV, a.m.m., side view. Beebe's gelatin dry plate, exposure 1½ seconds.

Composite photograph of seven adult male *Sandwich Islanders' Skulls*, base view, Nos. 425, 442, 444, 445, 446, 438, 286, Section IV, a.m.m. Beebe's gelatin dry plate, exposure 3 seconds.

Composite photograph of seven adult male *Sioux Indian Skulls*, base view, Nos. 483, 793, 792, 1119, 665, 330, 816, Section IV, a.m.m. Beebe's gelatin dry plate, exposure 1 second.

THE YAHGANS OF TIERRA DEL FUEGO.

EXTRACT from a LETTER addressed to Prof. Flower by the REV. THOMAS BRIDGES, of the South American Missionary Society, dated Ooshooia, Fireland, August 24th, 1884.

" You will perhaps be glad to have a few particulars of the physical state of these natives (the Yahgans). Among them are great differences of appearance, stature, bulk, and features. Whilst generally the hair is lank, you not unfrequently see wiry, short, frizzy hair; while most are wan and cadaverous, not a few have a decided rouge on their cheeks, especially the women. The people are invariably stout in their trunk, having little or no narrowing at the waist, and are short-necked, deep-chested, and of a vigorous frame. But in these particulars there are all degrees, some being even in health decidedly slender. In limbs, upper and nether, they are small, and their hands and feet are smallish. Work and change of life have an immediate effect upon their physique, resulting in fine muscular limbs, and hands fit for a blacksmith. In the

hair there are many shades of black, many having a reddish yellow tinge. Also their face-hair varies greatly, though generally they may be described as beardless. As regards the time of puberty, it is greatly retarded by hardship and forwarded by plenty. Some are as well developed at thirteen as others at eighteen or even nineteen years. Features vary greatly as well as complexion, and the hue of the person depends upon whether covered or exposed. Some have flat and very wide noses to an ugly degree, and others again are the reverse. With many the eyes have the Chinese dip, but in many this cannot be traced. The colour of the eyes varies from light hazel to deep black. I have never heard of an albino. The height of the men varies from 5 feet 2 inches to 5 feet 9 inches. Well-developed eyebrows and eyelashes are frequently seen, but as a rule they are more or less scarce. Animal life is very scanty in this country, and the natives are certainly not more than a third of what they were some thirty years ago. The Yahgans, according to a census I made in June, are as follows: men, 273; women, 314; children, 358; total, 945."

ON THE SO-CALLED WORKED FLINTS FROM THE MIOCENE BEDS OF
THENAY, IN FRANCE.

At the recent Congress of the French Association for the Advancement of Science at Blois, the Anthropological Section (presided over by M. Ernest Chantre, the eminent anthropologist of Lyons) discussed with much fervour the question of the existence of man in the Tertiary age, as exemplified by the tertiary deposits of Thenay, a village some twelve miles from Blois. These deposits have been made famous by the labours of the late Abbé Bourgeois, who in 1867, before the Congress of Prehistoric Archeology at Paris, made known his discovery in them of some small and rudely-chipped flints whose workmanship he attributed to the hand of man.

Some of the flints found in these beds have apparently been subjected to great heat, causing a crackled appearance on the surface; this also has been attributed to man's agency, and shows his knowledge of fire.

The proximity of Thenay to Blois gave an admirable opportunity to the members interested in prehistoric anthropology to see and examine for themselves this now well-known deposit.

Monday, the 8th of September, was fixed for the visit, and about forty members availed themselves of the occasion.

Among them were well-known geologists and anthropologists, such as M. Cotteau, a former President of the Geological Society of France, M. Fuchs, M. d'Ault, M. E. Chantre, M. Cartailhac, and others.

In order to facilitate the examination of the ground, and in the

absence of suitable natural sections, trenches had been opened some few days previously, under the competent superintendence of Messrs. D'Ault and Dalleau.

These showed the order of the various beds, and their particular characteristics. A careful examination indubitably established the early Tertiary age of the beds from which the late Abbé Bourgeois had obtained his specimens. The only hesitation seemed to be whether they should not be classed as Eocene, where they have been placed by M. Douvillé, the author of the government geological map of the district.

On all hands it was conceded that these clays with flints (where the crackled flints and those showing signs of human workmanship had been obtained) could not be younger than Early Miocene.

Thus the age of the beds in question seems to be conclusively settled, but the difficult and perplexing problem as to the cause of the marks of fire and *retouches* upon the flints caused an animated discussion, not only upon the spot, but when in session at Blois.

Suggestions were offered that the crackled appearance of the flints might be due to some physical cause, such as that of the action of thermal waters, of which there is evidence in the locality. Again, exception was taken to the want of experimental evidence of the action of heat and pressure in various forms upon the flint nodules.

After much discussion, the President proposed, and the meeting resolved, that laboratory experiments should be made in the manner suggested by M. Boulé, and M. Cartailhac was asked to assist in the work.

The balance of opinion, as expressed at the meetings, seemed to be against the acceptance of the evidence afforded by the Thenay deposits, as any support to the doctrine of Tertiary man.

Notwithstanding the minute search of forty members, only two pieces of flint were obtained having marks of the same character as those collected by the Abbé Bourgeois.

Most English anthropologists will probably lean to the opinion expressed by M. Cotteau, "that to admit man's existence so long before the extensive deposit of the lacustrine limestones of Beauce, a long time before the disappearance of the *Dinotherium*, a long time before the sea of the 'Faluns' had invaded the country and changed its configuration, would need proofs much more convincing than a few small flints, rare ever in collections, without any definite use, wanting the bulb of percussion, and only offering, as an indication of intentional work, some unequal and irregular chipping (*retouches*), and which are due doubtless to chance."

MARK STIRRUP.

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

DECEMBER 9TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

- From the KONG. VITTERHETS HISTORIE OCH ANTIQVITETS AKADEMILN.—
Antiquvarisk Tidskrift för Sverige. Del. VIII, Nr. 1.
From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE.—Archiv für
Anthropologie. Band XV, No. 4.
From the ACADEMY.—Nova Acta Academiæ Cæsareæ Leopoldino-
Carolinæ Germanicæ Naturæ Curiosorum. Tom. XXV, XXVI.
From the INSTITUTION.—Journal of the Royal United Service
Institution. No. 126.
From the SOCIETY.—Proceedings of the Royal Society. No. 233.
— Proceedings of the Royal Geographical Society. December,
1884.
— Transactions and Proceedings of the Royal Society of Victoria.
Vol. XX.
— Journal and Proceedings of the Royal Society of New South
Wales. Vol. XVII.
— Journal of the Society of Arts. Nos. 1670–1672.
— Bulletin de la Société Impériale des Naturalistes de Moscou.
No. 1, 1884.

- From the EDITORS.—*Ignis; Ouvrage Couronné par l'Académie Française. Opinion de la Presse.*
From the EDITOR.—“Nature.” Nos. 787, 788.
— Science. Nos. 90, 93, 94.
— Revue d’Ethnographie. No. 4, 1884.
— Revue Scientifique. Tom. XXXIV, Nos. 22, 23.
— Revue Politique. Tom. XXXIV, Nos. 22, 23.

The election of Miss H. MÜLLER, B.A., M.L.S.B., was announced.

The following paper was read by the author :—

On the CUSTOMS of MARRIAGE and SYSTEMS of RELATIONSHIP among the AUSTRALIANS. By SIR JOHN LUBBOCK, Bart., M.P., F.R.S., D.C.L., LL.D.

OUR ideas of marriage and relationship seem so natural and obvious that we have only of late years realised that, so far from being general to mankind, they may be said to be quite exceptional, and that even as regards ourselves there is reason to consider them as of comparatively recent origin.

I do not propose on the present occasion to enter into the whole question, or to recapitulate the views of Bachofen, McLennan, Morgan, Tylor, and others, whose researches have thrown much light on the question ; nor to indicate where I venture to differ from them. My object is to discuss the present state of our knowledge with reference to the customs of marriage and system of relationship among the aborigines of Australia, especially with reference to the valuable and interesting work on the “Kamilaroi and Kurnai,” by Messrs. Fison and Howitt, and their bearing on the view which I have advocated in the “Origin of Civilisation.”

The evidence which has gradually accumulated has satisfied most of those who have specially studied the subject that there was a time when individual marriage did not exist, when every man in turn was admitted to have a right to take (if he could) every woman whom he fancied, and when descent was traced exclusively through the mother.

The question then is, how did the custom of individual marriage arise ? and under what circumstances was the descent through the mother replaced by that through the father ?

The theory I have ventured to suggest as regards the former question is, that originally no man could appropriate any woman of his own tribe exclusively to himself, nor could any woman

dedicate herself to one man, without infringing tribal rights; but that, on the other hand, if a man captured a woman belonging to another tribe he thereby acquired an individual and peculiar right to her, and she became his exclusively, no one else having any claim to or property in her. Thus, then, the women in such a community would fall into two classes. The one, subject no doubt to the disadvantage of being aliens, and so to say slaves, but yet enjoying the protection, and in many cases having secured the affection, of one man. The other, nominally no doubt free, but in the first place subject to the attentions of all their tribesmen—attentions no doubt often very unwelcome, but yet which could not be rejected without giving bitter offence; and in the second without any claim on any one specially for food, shelter, and protection.

It seems to me that under such circumstances many women belonging to the latter class would long to exchange their nominal freedom, and hazardous privileges, for the comparative peace and security of the former; while, on the other hand, many men would desire to appropriate exclusively to themselves some woman of their own tribe by whom they were specially attracted. Hence would naturally arise a desire on the part of many to extend the right of capture which originally had reference only to women of a different tribe, and to apply it all to those belonging to their own.

Messrs. Fison and Howitt reject this view, but I must observe at starting that they use the words husband and wife in two very different senses. For instance—

"In the following pages," says Mr. Fison,¹ "the words marriage, husband, wife, and indeed all the terms of kinship, are used in a certain accommodated sense. Husband and wife are not necessarily man and wife according to our ideas. 'My husband,' for instance, among tribes such as the Australian, does not necessarily single out any one man in particular. A woman may apply it to any one of a group of tribal brothers who have the right of taking her to wife."

Such arrangements may be, and in some tribes no doubt are, the nearest approach to what we call marriage, but a husband in this sense is very different from a husband in ours. He has not the exclusive right to a particular woman which is in our idea the essence of matrimony, and the existence of which is just what we have to account for.

We nowhere at present find in Australia any tribe in which unrestricted "communal marriage," as I have ventured to call it, still exists. But we do find a very general custom that the tribes are divided into "gentes," or classes, and that all the men

¹ Page 28.

of each class are regarded as possessing marital rights over all the women of some one, or more, of the other classes.

Side by side, however, with this communal marriage state, as I have ventured to call it, we also find individual marriage; one man and one woman especially connected together as in more civilised communities. Messrs. Fison and Howitt apply the words husband and wife to both of these cases. I do not blame them for doing so; but at the same time, whether we apply the same word in both cases or not, we must not lose sight of the fact that the two relationships are by no means identical.¹ It is this latter or true marriage to which my suggestion refers, in criticising which Messrs. Fison and Howitt confuse, as it seems to me, the two different relations.

"The simplest, and probably the earliest, form of the class division amongst the Australian aborigines," says Mr. Fison,² "is the separation of a community into two intermarrying classes, each having a distinctive title, which is taken by every one of its members. This form has been found from South Australia to Northern Queensland, as well as among the islands." Among the Mount Gambier (South Australia) tribes, for instance, every man is either a Kumite or a Kroki, every woman is either a Kumitegor or a Krokigor. No Kumite may marry a Kumitegor, nor a Kroki a Krokigor.

In many cases the divisions are more complex, but the principle is the same, namely, that any man may consort with any woman belonging to another class or gens, but that no man may take a woman belonging to his own division. Sometimes when there are several divisions he is restricted to one of them. For instance, the Kamilaroi are divided into four classes: Ipaï, Muri, Kumbi, and Kubi; of which the women are Ippatha, Mutha (short for Muritha), Butha (short for Kumbutha) and Kubitha.

Ipaï marries Kubitha, and Kubi marries Ippatha; or rather Ipaï and Kubitha, Kubi and Ippatha, are regarded respectively as husbands and wives, just as Ipaï and Ippatha, Kubi and Kubitha, are brother and sister.³

"If a Kubi meets a stranger Ippatha, they address each other as spouse. A Kubi thus meeting an Ippatha, though she were of another tribe, would treat her as his wife, and his right to do so would be recognised by her tribe."⁴

¹ It would be convenient, I think, to use some such term as the New Zealand "noa," in the former case, and to say, for instance, that a woman was "noa" to a particular gens or gentes, and wife to a particular man.

² Page 33.

³ In one other tribe these gentes are still further divided and (*loc. cit.*, p. 64) an Ipaï may marry an Ippatha, provided that she has not the same name or totem.

⁴ Page 53.

Messrs. Fison and Howitt quote¹ from the Rev. John Bulmer rather a striking illustration of this. "When," he says, "I first went among the Murray blacks, one of the young men attached himself to me. He said we must be brothers, and as he was a Kilparra man, I was of course the same. I one day said to his wife, 'I am John's brother; you are my sister.' The idea was, to her, most ridiculous. With a laugh she said, 'No, you are my husband.'"

It must not, however, be considered that the right to take any woman belonging to another class was originally a concession. The true process was in the reverse order, and the forbidding to take a woman of the man's own class must be regarded as a restriction. There are not wanting traditions of a time when this restriction did not exist. But, however this may be, we have complete and conclusive evidence that in large portions of Australia every man had the privileges of a husband over every woman not belonging to his own gens; sharing of course those privileges with every other man belonging to the same class or "gens" as himself.

But although we may call this "marriage"—and it is a right which in old times was, and to a certain extent still is, recognised as perfectly legal and respectable—it does not help us to the origin of individual marriage.

"Granting the old individual commune," says Mr. Fison,² "his (Sir John Lubbock's) whole theory rests upon the assumption that a warrior has a sole right, as against his tribe, to a captive taken by him in war. In support of this right Sir John advances nothing whatever beyond the assertion that it would be likely to accrue. On the contrary, it appears to me in the highest degree unlikely, because among savages the individual has no rights as distinct from the group to which he belongs; and, moreover, it is directly contradicted by evidence which can be tested at the present day."

I have read this passage with surprise, because so far from having given none, I have brought forward a great deal, and as it seems to me very strong, evidence in support of my suggestion.

In addition to the 1,000 miles of wives so forcibly described by Messrs. Fison and Howitt, the Australian had his own individual wife. How does he acquire a special right to her? I have argued that this was originally by right of capture, and Messrs. Fison and Howitt categorically deny this. But let us see what they say themselves a few pages further on. In describing the habits of the Kurnai they come to his marriage. How does

¹ Page 289.

² *Loc. cit.*, page 151.

he procure his wife? "The young Kurnai," says Mr. Fison,¹ "could, as a rule, acquire a wife in one way only. He must run away with her. . . . It is no use his asking for a wife excepting under the most exceptional circumstances, for he could only acquire one in the usual manner, and that was by running off with her."

Mr. Fison indeed feels that this case is directly opposed to his views, and ingeniously attempts to explain it away by assuming that the Kurnai consists of a single gens so isolated that it was impossible for the men to acquire wives of any other gens. For this supposition, however, there is no direct evidence whatever, and considering the physical conditions it seems highly improbable. Moreover, the case of the Kurnai by no means stands alone, and, as Mr. Rusden has pointed out in his "History of Australia," "to imagine that the Kurnai tribe invented a complicated system in order to relieve themselves from a difficulty in which it is gratuitously supposed that they were placed, is to invent a problem for the sake of a theory."²

For instance, as regards the Geawe-gal tribe, they say, "In the case of female captives, they belonged to their captors, if of a class from which wives might be legally taken by them. If of a forbidden class, then I think that the captor might make an exchange with some one of the proper class who had a woman at his disposal."³

"In the Wonghi tribe,⁴ whose territory was situated on the north side of the Lachlan River, for about eighty miles above Whealbah, a woman was the property of her captor when she was not of a tribe forbidden to him," i.e., if she did not belong to a gens with which it was unlawful for him to intermarry.

As regards the Kamilaroi, Mr. Howitt states⁵ that they have "the right to the female captive, controlled by the exogamous rule of marriage."

Speaking of the Turras, another Australian tribe, they say,⁶ "There is individual marriage. Consent of the woman's parents is necessary before marriage; if this is refused, the pair occasionally elope. Wives are also obtained by gift, exchange, or capture. A female captive belonged to the captor." Indeed, speaking generally, Mr. Howitt observes:⁷ "That marriage is brought about throughout Australia by capture is quite certain. A few examples will illustrate the conditions under which this

¹ Page 200.

² Rusden, "History of Australia," vol. i, p. 119.

³ Page 280.

⁴ Page 345.

⁵ Page 341.

⁶ Page 241.

⁷ Page 343.

practice exists. Among the Kūrnai, marriages were brought about most frequently by elopement, less frequently by capture, and least frequently by exchange or by gift. Marriage by capture was as follows :—

1. Women were stolen from kindred divisions or kindred classes, as by the Tatūngolūng from the Braiakolūng. That is, they made raids upon those communities with which they intermarried.

2. Women were captured in wars between the classes, as in the case of the battle of Bushy Park, at which the Brt Britta woman became a captive to men who were held by the elders to be too near to her, and she was therefore given to Bündawal, whose division and hers intermarried.

3. Women were captured from alien tribes, as in the case of the Omeo Brajerak, who were killed at the Top Plain of the Kūrnai (p. 222); and in the case of night attack by Brūthen Münji (p. 214) on the Brajerak, at the Upper Tambo River.

In these cases the wives of the slain Brajerak were taken. The Kūrnai and the Brajerak were not intermarrying tribes, unless by capture, and in this case each man took the woman whose husband he had been the first to spear.

Mr. Howitt, moreover, points out¹ "that marriage by elopement was very common in Australia, and observes that marriage by elopement and marriage by capture differ only in one essential, namely, the presence or absence of the woman's consent. We find that both these forms occur not only as producing individual marriage where the class rules have become much weakened, but also group marriages where the class rules are still full of vitality."

Mr. Howitt further expresses² the opinion, as the result of his investigations, that "We may feel assured that, when opportunity offered, captives would be made. The question, then, is, would the individual warrior retain his captive in defiance of communal rights? If he resembled his descendant, the Australian savage, I should say he assuredly would not, unless in accordance with the tribal laws." Now I admit that he might not marry her if she belonged to an excluded gens, but my contention is that if he might marry her at all, she would become exclusively his.

They also quote³ the very similar New Zealand custom. There also a woman might consort with a man, among those with whom marriage was lawful, until she was married to some one man, when she became "tapu," or specially assigned, to him.

Now how was this marriage arranged? The custom was—

¹ Page 354.

² Page 347.

³ Page 206.

I quote from a note by Mr. Fison himself—"for all the young men who had a common right to a girl to have a struggle for her, each one endeavouring to drag her away from the rest. The girl was often seriously, or even fatally, injured by her fierce suitors dragging her hither and thither; and sometimes a baffled pursuer, seeing that he had no chance of securing her to himself, would plunge his spear into her breast, so that no one else might enjoy the prize he had missed."

These cases are taken from Messrs. Fison and Howitt themselves, but the fact is that, so far from having advanced "nothing whatever beyond the mere assertion that it would be likely to accrue," in support of my suggestion, I quoted evidence which seemed to me conclusively to show that the special right of a man to his wife rested upon actual capture among a large number of tribes; that the marriage ceremony was clearly based upon this right among many others; and further, that a clear "symbol" of the old custom could still be recognised in the marriage customs of many savage races.

It seems to me that Messrs. Fison and Howitt have themselves brought forward strong evidence in support of the very view they reject.

Mr. Howitt further says in a passage already quoted,¹ "In this view marriage by capture might exist in an undivided commune, and the female captive would, in that case, be incorporated with it. We cannot suppose that men of such a commune would refrain from capturing women of other communal groups. We may, on the contrary, feel assured that, when opportunity offered, captives would be made. The question then is, would the individual warrior retain his captive in defiance of communal rights? If he resembled his descendant, the Australian savage, I should say he assuredly would not, unless in accordance with the tribal laws."

I do not quite understand how far Mr. Fison would extend the proviso contained in the words "unless in accordance with the tribal laws." It appears to me, however, that so far as my view is concerned the proviso is immaterial. I am quite ready to admit the limitation, which indeed I should myself expect. What we have to account for is not the right to marriage privileges, but to retain those privileges exclusively.

Messrs. Fison and Howitt rely much on the fact that in Australia marriage with a female captured in war is forbidden if she belongs to the same gens. This they regard as a conclusive answer to me. "Here then," they say, "we have exogamy certainly not produced by marriage by capture, according to Sir John Lubbock's theory, but actually compelling marriage

by capture to conform to long-established exogamous rules." I confess I see no difficulty or inconsistency in this. The Australians were probably originally one tribe. Exigencies, mainly no doubt of food, compelled them to spread over the continent. This process did not affect the division into gentes, which remained more or less unaltered; but it necessarily broke them up into more or less distinct tribes. There is, therefore, nothing contrary to the theory which I have ventured to suggest, that when a woman was captured from another tribe she should only be possible as a wife if she belonged to a gens with which cohabitation was permissible.

Messrs. Fison and Howitt criticise my remark that "where an objection to the marriage of relatives existed, exogamy was unnecessary; where it did not exist exogamy could not arise" in the manner they have suggested, *i.e.*, as a reformatory movement. They maintain that it does afford a protection against the marriage of relatives. This is a matter of fact with reference to which every one can judge for himself, and it is clear that in cases where relationship is traced exclusively through the father it does not exclude marriage with one's nearest relation, so long as they are on the mother's side; and, *vice versa*, that when relationship is traced exclusively through the mother, it fails to exclude marriage with the nearest relations so long as they are on the father's side.

The fact is, we require a new word for a sort of relationship which we do not ourselves recognise. Savages who have the custom of descent through females do not recognise the family of the father as belonging to the same gens. In one sense they are not relations. They have no right of inheritance, nor does a very near connection (from our point of view) interpose any barrier to marriage. On the other hand, of course no one would assert that they recognised no bond of union between father and son.

They have, in fact, three distinct bonds of union:—

1. The tribe;
2. The gens; and
3. That actual connection which exists between father and son, even though they are not regarded as belonging to the same gens or family.

"Sir John Lubbock," they say, "observes that 'Though a man's sister's children are his nephews and nieces, his sister's grandchildren are also his grand-children, indicating the existence of a period when his sister's children were his children.' ("Origin of Civilisation," p. 129.)

"This is an evident mistake, for those relationships afford no such indication. They result from the fact that a man's sons

and daughters intermarry with his sister's children. His sister's grand-children, therefore, must necessarily be his grand-children. They are his children's children."

No doubt there is here an evident mistake; but not, I think, on my part. A man's sons and daughters *may* no doubt under this system intermarry with his sister's children, but they *need* not do so. If they do not, and this would oftener than not be the case, Mr. Fison's explanation of course falls to the ground.

The theory that the system of exogamy was intentionally and designedly introduced in order to avoid the evil consequences of marriage between near relations seems to me untenable, firstly, because it is extremely improbable that so far-seeing and self-denying an ordinance would in almost every part of the world have been evolved by men at so low a stage of social development; and secondly, because lawgivers so wise and thoughtful would not have contented themselves with a rule which so imperfectly carried out their principles, and which left one-half of the very nearest relatives unaffected.

In conclusion, "communal marriage" (as I have proposed to call it) was, it seems to me, aboriginal and founded on natural instincts. But how did the institution of individual marriage arise?

"Individual marriage" cannot be derived from "communal marriage," because, however much the gentes may be subdivided, the wives must remain in common within the gens.

Messrs. Fison and Howitt do not, I think, sufficiently realise this fundamental distinction between these two customs. They speak of both as "marriage," and indeed we have no other word for them. Yet they are radically distinct, and even opposite in their characteristics.

I adhere, therefore, to the explanation I have suggested in the "Origin of Civilisation." Interesting and valuable as Messrs. Fison and Howitt's volume is, their criticisms seem to me unfounded, while there is additional evidence in support of my views even in their own work.

The following paper was read by the Director :—

The JERAEL, or INITIATION CEREMONIES of the KURNAI TRIBE.
By A. W. HOWITT, Esq., F.G.S.

The Kurnai Jeraeil.

IN a former communication on Australian ceremonies of initiation, I mentioned that there are marked differences between those of the Kurnai and those of the tribes whose initiation I therein described. I now propose to give an account of the Kurnai Jéra-eil¹ sufficiently detailed to bring into view its principal features, and to mark in what manner it differs from, or has resemblance to, the Kūringal of the Murring.

1. *Gathering the Jeraeil.*—The gathering together of four clans² of the Kurnai tribe who participated in these ceremonies was preceded by long consultations between the elders of the clan in which the initiative was taken. When it was found that there were a sufficient number of boys whom it was necessary to "make young men," the principal headman³ took action by sending out his messenger,⁴ who conveyed a summons⁵ to the principal headman of the next clan. He carried with him some token from the sender—such as his club, or boomerang, or shield—and he had given to him, to be conveyed with great secrecy, one of the Sacred Bullroarers (*Tündün*) which was the special emblem of his mission.⁶ He delivered his message to the old man to whom he was sent, and handed to him the token and the tundun. The headman, having received these, called the elders together at some suitable place apart from the camp; and showing them the token and the tundun, repeated the message. After due consultation by the elders, their decision was announced in a general assembly of all the men; and the headman now in his turn sent the message forward by one of

¹ Each native word will be accented once for all when first used.

² It is well to bear in mind that the Kurnai tribe is divided into five clans, each of which has succession from father to son in the same portion of the tribal territory. I use the word "clan" advisedly, because this tribe has agnatic descent. When I use the word "horde," I refer to a local division of a tribe having uterine descent as to its social organization. The agnatic clan and horde are distinct from the class and totem, which have descent through the mother.

³ Gwéra-eil = eminent or great, Kurnai = man.

⁴ Báiaur.

⁵ Léwin.

⁶ The use of the "message stick" was in a very rudimentary stage with the Kurnai. When a messenger was sent to gather together certain local groups, there was given him, as a sort of *aide mémoire*, a plain stick for each group, cut from any convenient tree or bush: these he delivered with his message. They were not marked or notched.

his own people. In this way the message would travel from clan to clan, and from group to group, until the whole Kurnai community became aware of it—that is to say, all the initiated members of the community; for these proceedings were carefully concealed from the women and children, excepting that the elder women were made aware of what was being mooted by such expressions as “The Mrarts (ghosts) are going to kill a kangaroo.” This refers to one of the stages into which the Jeraeil is divided.

These preliminary proceedings take up a long time, perhaps several months. Time is of no value to the blacks, and as the ceremonies were usually held during the summer months, the initiative may have been taken even as far back as the previous autumn or winter.¹ More than one set of messengers travelled to and fro in the Kurnai country before the final arrangements were completed, that is, before the exact time for the meeting was agreed upon, as well as the locality. This latter would in most cases be in the country of the headman who called the assembly, for it would be to him, and at his call, that the others came.

When the time for assembly drew near, the most distant group started in company with the Báaur (messenger) who had been accredited to them. Proceeding on their way by easy stages, they joined the next local group; until, on reaching the appointed tryst, their contingent might include all, or nearly all of their clan, who were on, or near to, their line of march,

The arrival of such a contingent was announced according to rule. A good instance is that of the last great Jeraeil, which was held on the north bank of the Mitchell River at Lucknow, nearly a quarter of a century ago. According to my informants this Jeraeil was called by the principal headman of the northern moiety of the tribe, the renowned warrior Brüthen Münji.² The southern moiety arrived under the guidance of their Gwérael Kurnai, Bünjil Gwórun.³ Marching in front of his people, and coming to the edge of the high bank overlooking the river where the town of Bairnsdale now stands, he gave the signal for halting by sticking the great jag-spear, which he carried, into the soil. The men thereupon all halted, and the women, hastily disengaging themselves of their burdens, and rolling up their possum rugs, commenced to beat time upon them to the words of a Jeraeil song. This, being heard at the encampment beyond the river, was immediately replied to by the same song.

¹ Thus, in calling together the Jeraeil which I describe in this paper, I sent out my messengers to the headman of the Brabra clan in August, and the Jeraeil was held at the end of January following.

² Bruthen-Munji, “Kamilaroi and Kurnai,” p. 213.

³ Gworun = Thunder.

As the contingents assembled at the appointed place, each one encamped on that side nearest to its own country. In time the whole assembly would thus be gathered together.

During the waiting for arrivals, and during the intervals between the several stages of the Jeraeil ceremony, there were songs and dances at night, in which sometimes the hosts and sometimes the visitors were the performers. At these ceremonial gatherings matters of tribal concern were arranged; and it not infrequently happened that feuds broke out, which required to be temporarily assuaged by those concerned claiming, or submitting to, the ordeal of spears or clubs.

These may be passed over without further notice, as not having any essential connection with the initiation ceremonies. I may, however, notice that these ceremonies were attended by the Kurnai alone, and not even by all of them; for the fifth clan of the tribe, the Kráuatún, did not participate, and had no ceremonies of its own. I have heard that some of the blacks of the Western Port district, which adjoins the Kurnai country on the west, did at times attend the South Gippsland Jeraeils, but I am unable to verify the statement. At any rate, no aliens from any other adjoining tribes were permitted to attend.

At the Jeraeil which I attended, and which I am about to describe, the old men had decided that, being short-handed, the Krautun headman and one other should be permitted to *help*. This distinction between the words "help" and "participate" marks the fact that neither of these men had been formally initiated, that is to say, they had not passed through the stages of Tūtnūrring and Brēwit to Jeraeil. Moreover, although the Kurnai were short-handed, on this occasion, and had only six boys to be initiated, they absolutely refused to allow any half-castes even to be present, giving as their reason, "these half-castes have nothing to do with us." This is a well-marked illustration of the view of agnation, and of the derivation of the child, held by this tribe.¹

All the Kurnai being assembled, the headmen decide when the ceremonies shall commence. In the Jeraeil which I shall now describe, the ceremonies were, according to the statements of the old men who conducted them, the exact reproduction of the Jeraeil of their fathers, at which they themselves had been initiated, and made the depositaries of the ancestral knowledge. After the occupation of Gippsland these ceremonies were held at intervals for some twenty years. They then fell into disuse, and were only now revived in response to the message which I had

¹ It would be unsafe to argue from the custom of the Kurnai on this matter to that of the Australian tribes in general.

sent round.¹ The old men said they were glad to receive my message, and to hold the Jeraeil, for the reason that the Kurnai youth "were now growing wild. They had been too much with the whites, so that now they paid no attention either to the words of the old men, or to those of the missionaries."

2. *The Preliminary Ceremony.*—In the afternoon of the day on which the first ceremony of the Jeraeil was held, the oldest woman,² the wife of the second headman, called the other women together near the camp; and, having then summoned to her the Tutnurring (novices)³ proceeded to drill them, as also their Kráu-un,⁴ in the performances. It was, in fact, a rehearsal. The boys were seated cross-legged in a row with their arms folded, and were told by the old woman to keep their eyes cast down, and not to stare about, also to mind and keep good time to the drumming by the women. The Kraun were placed in a row just behind the Tutnurring, and were instructed to copy their movements exactly. The women now commenced to drum slowly on their folded rugs, and in accord with the time the two rows of seated figures moved their bodies sharply first to one side and then to the other, at the same time reclining the head almost on the alternate shoulders. One boy, who was not quite quick enough in his movements, was told by the old woman to "move more sharply, as if some one were tickling him." After some practice, the old woman thought the performance satisfactory, and told the boys to go away and rest themselves.

During the day the Jeraeil ground had been selected by the headman in an open space about a quarter of a mile from the camp. All the little bushes were chopped up, and the ground cleared of sticks and rubbish.

About sundown the headman gave the word to commence, and walked off into the forest, followed by the men. The old woman walked to the Jeraeil ground, followed by the women and by the novices, who were attended by one of the Büllawangs.⁵

¹ Those to whom the message goes accompanied by the Tundun must obey the call. Two of the Braíaka clan failed to attend after being summoned, having remained at one of the missions at a wedding. The old men were very indignant, and said, "when that kalk (wood) goes to a man he *must* come, he *cannot* stop away." In olden times this non-attendance would have had serious results for the two Braikas.

² Gweraeil Rüküt; Rukut = woman.

³ The novices are called Tutnurring during the ceremonies, afterwards they are Brewit (young men) or Jeraeil.

⁴ The Kraun is one of those women who stand in the relation of "sister" to the Tutnurring. For instance, she is his "tribal," if not "own," mother's brother's daughter. In other words, she is the "tribal," if not "own" sister to the Bullawang.

⁵ The Kurnai name for the Australian robin (*Petroica multicolor*). Pointing to one of these birds, an old man said to me, "that is the policeman who looks after the boys." The birds Bullawang, Yeerung, and Djeetgun are said to be three of the "lén muk-kurnai" ("real Kurnai ancestors").

This man being a cripple was unable to take an active part in the ceremonies, and had therefore been assigned specially to watch and instruct the Tutnurring.

On reaching the ground the Tutnurring and the Krauun were seated in two rows, as at the rehearsal, the pairs being allotted to each other in accordance with their group-relationship. The mothers of the boys stood in a row behind them, each bearing a staff surmounted by a tuft of eucalyptus twigs.¹ The Gwerael Rukut acted as mistress of the ceremonies. When the arrangements had been completed and the boys were sitting silently with their eyes cast down on the ground, a distant noise was heard of rhythmical shouts, accompanied by dull muffled-sounding blows. These coming nearer, a procession of men came in sight led by the headman. The performers were smeared over with charcoal powder,² and bound round with strips of white bark, across their bodies like shoulder-belts, round their waists, legs, and arms, and in coronets round their heads, from which rose tall waving tufts of grass. Similar bunches of grass were thrust from each side through the nose-perforations. Each man held a strip of bark, about three feet in length and four inches wide, in each hand. In the olden times—twenty odd years back—the men were entirely naked during these ceremonies, but now civilisation has so far modified their customs, even in the Jeraeil, that they wore their trousers, and some of them their shirts also. The line of men came rapidly forward from the bush in a series of short runs, following and imitating the actions of their leader, who came on in a serpentine course, shouting "Huh ! Huh !" beating the ground in time with his strips of bark, first on the one side and then on the other. After every fifteen or twenty paces the men stopped, and, raising their strips of bark, set up a loud shout of "Yeh !" (Hurrah !)

As soon as the men appeared the women began to beat their rugs, the mothers kept time by stamping their yam-sticks on the ground, and the seated rows of Tutnurring and Krauun swayed in perfect unison alternately to right and left. The men, having run in a winding course once or twice past the boys, formed a

¹ These staves should properly have been "yam-sticks," but these implements are no longer used by the Kurnai, flour having replaced the former food of roots or tubers. The bunches of leaves which play a part in these ceremonies are called "Jereng" = branches, boughs, or twigs. Hence Jeraeil, which may be translated "leafy," or "having leaves or twigs." It is analogous to the Murring word "Kuringal," which may be translated "of the forest," or "forestry." Eil, al, or gal, are adjectival terminations.

² Both in the Kurnai and in the Murring tribes the use of charcoal powder belongs to these ceremonies and to sorcery. Among the Kurnai the Bunjil-Barn, i.e., wizards who killed by the Barn (*Casuarina suberosa*), rubbed themselves all over with charcoal powder when at their incantations. See "Kamilaroi and Kurnai," p. 252.

semicircle in front and near them; and, kneeling down, struck the ground violently with their bark strips, shouting "Huh! Huh! Yeh!" This continued some little time, and then the men walked off to the camp after having stripped off their disguising costumes.

This preliminary ceremony ended the proceedings for the day. The Jeraeil has now commenced, and by it the initiated men have claimed the boys from their mothers, and have shown their intention of making men of them.

3. "*Laying the boys down to sleep.*"—This second stage in the ceremonies commenced at a little before sundown on the following day. In the afternoon the men had prepared the place in which, as they said, the Tutnurring were to be "laid down to sleep." A curved screen of boughs had been made, about three feet in height, twenty-five feet wide across the opening, and ten feet deep. The space thus partly enclosed was filled about six inches deep with freshly plucked eucalyptus twigs so as to form a couch.

The same ceremonies were now repeated that had been gone through on the previous evening. At their termination the men retired into the bush to prepare for the next ceremony. The boys were placed standing in a row with their faces toward the camp, the Kraun being in another row behind them, and behind them again were the mothers. It was now strongly impressed upon the boys by the Bullawang in charge of them that, when the men returned, and offered rods to them, or threw rods on them, they were on no account to touch them, but must let them fall unheeded to the ground, otherwise the Jeraeil would have to be recommenced from the beginning. The reason of this caution is that the rods, which are offered to the boys, are afterwards gathered up by the women, and this would be unlawful for them to do if any of the Tutnurring had touched them with their hands. From the commencement of the Jeraeil there is an increasing separation of the Tutnurring from the women, until they are mutually tabooed after the "sleeping" ceremony. For either then to touch the other would be something very like pollution, and would, as the Kurnai believe, be followed by serious bodily illness to one or both.

After a short time of wailing, we heard in the distance a curious rattling sound accompanying the words "Ya! Wa! Ya! Wa!"¹ At intervals there was a pause, followed by shouts of "Yeh!" The men came in view, led by the old headman, slowly marching in line. Each man held a bundle of thin rods, called Téddeleng, in each hand, which he struck together to the words

¹ No meaning can be given for these words. I was told in reference to them "Our fathers always said and did thus to make the boys into men."

"Ya! Wa!" Several men carried other bundles slung round their necks to supply the women and the Kraun, who join in this ceremony. Having marched round the two rows of Tutnurring and Kraun, they then passed between the two rows, and encircled the boys, thus severing them finally from the Kraun, and from their mothers. As they halted, each presented his bundle to one of the boys, and then proceeded to launch the rods one by one into the air over them, so that a continual shower fell on the Tutnurring, and thence to the ground, where they were carefully collected by the Kraun.

This part of the ceremony marks, as I have said, the separation of the boys from the women from this time forward until the novice has been readmitted by the old men into the community; but, even then, the young man does not stand on his former footing. He no longer lives in the same camp with his parents and sisters, but in the camp of the Brewit, or young men. So strict is the rule as to the rods that, had a Tutnurring touched one of them, the Kraun would have dropped all those they had collected, and would have returned to the camp with all the women present. The Jeraeil would have had to be recommenced from the beginning, and the boy who had caused this serious break in the ceremonies would have been severely punished. Probably in the olden times he would have been speared.

The Kraun having collected the rods re-formed their line behind the motionless Tutnurring, and the Bullawangs formed a third line facing them. There were three of these to each boy. The Bullawang is the Tutnurring's "own," or "tribal" mother's brother's son, and belongs to that local group of the tribe with which the Tutnurring's father's group intermarried. These Bullawangs had been selected after careful consideration, the old women taking a prominent part in the genealogical discussion which occurred; for, owing to the diminution of the tribe, it was necessary to trace out "group-relations," as there were not enough "own relations" to supply the required number of Bullawangs to each boy. I heard the old Gweraeil Rukut ask two of the boys which part their "mother's father" belonged to; and it was by this knowledge of the locality and of the individual that the particular Bullawang was allotted.

With loud shouts of "Huh!" and the rustling of bunches of leaves, each group of three Bullawangs raised their boy several times high in the air, he extending his arms towards the sky as far as possible.¹ The women now raised and shook their leaf-

¹ I was much struck by the similarity of this raising the hands towards the sky, to the pointing upwards of the Murring at their Kuringal; but I could not learn that it had any reference to Müngan ngaura, who is the equivalent of the Murring Dáramálán.

topped sticks, and the men their handfuls of leaves, over the boys. Immediately following this the Bullawangs were raised into the air, each one by his fellows, and with his face turned towards his own country. As each one was raised aloft the men crowded round rustling boughs and with loud shouts of "Huh!"

The last scene of this part now took place. It is considered most important that it be carefully carried out according to the ancestral rules. The Tutnurring are to be laid to sleep as boys in order to be awakened as men.

Each one was led by three old men to the enclosure wherein the couch of leaves had been prepared, and was there carefully laid down with exclamations of "He! Nga!"¹ The novices were laid on their backs side by side, with their arms crossed on their breasts. Each had a bundle of twigs under his head for a pillow. The old men now carefully and completely covered them with rugs, a few leaves having been first sprinkled over their naked bodies. They were so completely covered up from head to foot that not a glimpse of any one of them was visible, nor could they see anything.

A large fire was then lighted at their feet, and the women made another at the back of the highest part of the bough screen. While this was being done, the old men were admonishing the boys as to their conduct while lying down. They were neither to move nor to speak. If one of them wanted anything he was to signify this to his Bullawang by chirping like an Emu-wren (*Yeerung*²). They were finally reminded that, from this time forth, they were no longer to consort with children, but to behave themselves as men. Moreover they were carefully to listen to and remember the instructions of their Bullawangs.

These boys were now said to be put to sleep. In the olden days, and, indeed, at all times when time was of no object, this part of the Jeraeil would have continued without intermission till morning. But on this occasion, as time was short,³ the proceedings only continued till about midnight, in view of the ceremonies which had to take place next day.

The two fires having been lighted, and the Tutnurring formally instructed, the important proceedings commenced. Two Bullawangs crouched down at the boys' heads, in order to be ready if their aid were required. I was amused at this time and during

¹ "He!" may be translated here "Well," or "Good." The aspirate has a nasal sound which cannot be represented in writing. "He!" is also used affirmatively, as we use the sound "Hm!" Nga = yes.

² *Yeerung*, the totem of the Kurnai males, as *Djeetgun* is that of the females.

³ This was because I could not remain beyond a certain date, and also because the beginning of the Jeraeil had been delayed by the late arrival of some of the Kurnai. As it was, the Jeraeil extended over five days. In olden times it would have taken two or three weeks.

the night in watching the men, and listening to what they said to any one of the boys who, wanting something, uttered the chirp of the Emu-wren. The Bullawang had first to stoop down and ask the boys in the neighbourhood whence the chirp came, "Is it you? Is it you?" until he questioned the right one, when an affirmative chirp replied. Then he had to find out what the boy wanted, which he could only do by a series of questions, the boys not being allowed to speak. Several times he was completely posed; and, after a number of ineffectual queries, such as "Are you too hot?" "Is there a stick sticking into you?" "Do you want to be moved?" "Do you want to drink?"—he had to wait, and scratch his head, in the hope of thinking of the right question.

The ceremony commenced by the Gwerael Rukut standing up at her fire with a bundle of rods in each hand, and slowly beating them together to the words "Ya! Wa!" and "Yeh!" at intervals. All the women joined in, and the headman, with all the men, followed suit at their fire. After this had gone on for perhaps a quarter of an hour the old woman moved off, and marched round the enclosure to the tune of "Ya! Wa!" followed by the women, and these followed by the men. This went on for hours, the only sounds being the soft tramp of the people perambulating the enclosure, the regular rattling of the rods, and the monotonous utterance—I cannot call it chaunt—of the words "Ya! Wa! Yeh!" This was sometimes varied by the words "Yeerung!" and "Kaiung!"¹ instead of "Ya!" and "Wa!" but the expression of exultation "Yeh!" was in all cases used at intervals. Anything more monotonous than this part of the ceremony I cannot conceive; but the Kurnai seemed to derive great satisfaction from it, and to think it very powerful in infusing manly virtues into the boys. It is supposed to have the effect of putting them to some kind of magic sleep, not like the ordinary sleep of mankind, from which they may waken into manhood.

About midnight the old woman gave the signal for rest by ceasing her march, and subsiding into her opossum rug by her fire. The women all followed her example, the men lay down round their fire, and all were soon asleep. Just before dawn the old headman woke, and called out to the Gwerael Rukut to rouse the women. Very soon the proceedings recommenced just where they left off the night before. The slow marching round to the monotonous beating of the rods, and the cries of "Yeerung! Yeerung! Yeh!" went on for about half an hour, when

¹ Kaiung is the women's apron, which in the old times was worn by the Kraun after this ceremony until she married, when it was discarded. I believe that Djeetgun, the female totem, the "women's sister," ought also to have been invoked during the marching round. I noticed its omission, but neglected at the time to inquire the reason, and I have not since had a chance of so doing.

the women ceased, leaving the men standing in a crowd at the feet of the prostrate motionless Tutnurring, still beating their rods to the same old song, and invoking Yeerung, the "men's brother" for the last time.

The Tutnurring had been put to sleep the night before as boys; they were now to be awakened from their sleep as men. In order that this should be done in a proper manner, the old headman and the doctor¹ took it in hand.

The woman left the Jeraeil ground and went to the camp; for the ceremonies which are now held are those at which it is unlawful for the women or the uninitiated to be present. At these, the women are told, Tundun himself comes down to make the boys into men; and they are assured, and so far as I know they believe, that were they to be present, or even to see or hear what goes on, he would kill them. So strong is this feeling against the women knowing anything of the secret rites that, even now, after nearly half a century of occupation of Gippsland by the white men, one of the headmen said to me, "If a woman were to see these things, or hear what we tell the boys, I would kill her." Whether this would now be really done I cannot say—perhaps not—but it might be, and I am certain that at the time the old man meant what he said.

The two headmen, and the Mulla-mullung, who, by virtue of his office, had, in addition to the charcoal powder, a band of white drawn across his face from ear to ear, now began to uncover the Tutnurring at one end of the row. He seemed to be in a deep sleep: and the old men raising him up into a sitting posture, made curious grunting noises, for the purpose, as one of them told me afterwards, of wakening him. He, being placed sitting on the couch of leaves in front of the fire, had his blanket drawn over his shoulders and head like a hood. In this manner all the boys were roused up, and seated in a row, having then additional rugs drawn over them all so as to screen them from the cold. These boys, having lived so much among the whites, were thought by the old men to have departed too much from the good old ancestral virtues, and it was therefore necessary that the white man's influence should, if possible, be counteracted. It was thought that the lads had become selfish, and no longer willing to share that which they obtained by their own exertions, or had given to them, with their friends.

¹ The doctor is Mulla-mullung. In this tribe the functions of the medicine-man were divided into those of the Mulla-mullung (doctor) and the Birra-ark (bard, seer, and spirit-medium). The former bewitched people, or healed them of the bewitchments of others. The latter communicated with the ghosts, and learned from them the corroboree songs (*Günyerü*). He was as harmless as the Mulla-mullung was mischievous. The last Birra-ark was shot in the troublous times of the settlement of Gippsland.

The boys being all seated in a row, at each end of which was one of the headmen, the doctor proceeded to exercise his magical functions. He stooped over the first boy, and, muttering some words which I could not catch, he kneaded the lad's stomach with his hands. This he did to each one successively, and by it the Kurnai supposed the "greediness" of the youth would be expelled.

It is at this time that the Tutnurring are invested with the belt of manhood,¹ the kilt,² the armlets,³ forehead band,⁴ nose-peg,⁵ necklace,⁶ in fact with the full male dress.

From this time the youths are constantly supervised and instructed by two of the Bullawangs, all of whom take this duty in turn. A camp is formed in which the Tutnurring sit, or sleep, and which they are not allowed to leave unless accompanied by a Bullawang.⁷ This part of the ceremonies being satisfactorily concluded, the men went away to their camps to get their breakfasts, to rest and to sleep, or to go out hunting till the afternoon.

During the morning an incident occurred which was very significant of the profound feeling of secrecy in regard to the central mysteries which is felt by the Kurnai. One of the headmen came to me, and intimated that the old men, before proceeding further, desired to be satisfied that I had in very deed been fully initiated by the Bräjerak black fellows in their Kuringal.⁸ I caused them all to come to me in the recesses of a thick scrub, far from the possibility of a woman's presence, and I there exhibited to them the bullroarer which had been used at the Bräjerak initiations, previously attended by me, and which I had brought back with me.⁹ I also fully satisfied them that I had witnessed all the ceremonies of the Kuringal. It was remarkable that, long as the Kurnai had known me, and intimately as I had known some of them, especially the headman Tülabá, these special secrets of the tribe had been kept carefully concealed from me by all but two, one of whom was now dead, and the other absent from the Jeraeil, ostensibly through sickness

¹ Bárun.

² Bridda-bridda.

³ Pibōro.

⁴ Jimbrin.

⁵ Gūmbart.

⁶ Tákwai.

⁷ So strictly are the novices looked after and drilled, even as to the manner in which they are to sit in their camp, "covered with their blankets like men, and not behaving like boys," that an old man of the now almost extinct Woiwörung tribe of the Yarra River, who attended this Jeraeil with me, after seeing this going on all day, said confidentially to me, "This one all the same like it Lockup."

⁸ All alien blacks are called by the Kurnai, Brajerak, i.e., wild men.

⁹ After I had shown them the Murring bullroarer, I also produced the smaller one of two which are used by a Queensland tribe. They at once pointed out to me, after inspecting it, that there ought to be another, and a larger one; and they seemed much pleased when I informed them that they were correct in their surmise, and that I had both.

but really by reason of his consciousness of tribal treachery, and fear of the consequences if it were brought home to him. The old men were very urgent to know what "wicked man"¹ had betrayed to me the secrets of the Jeraeil, and especially of the Tundun; but they were silenced, if not satisfied, when I said that the man who first told me was dead.

4. "*Showing the Grandfather.*"²—This is the cryptic phrase used to describe the central mystery, which in reality means the exhibition to the novices of the Tundun, and the revelation to them of the ancestral beliefs. It is used, for instance, by the Bullawangs to their charges, as in telling them "This afternoon we will take you, and show your grandfather to you."

The Kurnai have two bullroarers, a larger one called "Tundun," or "the man," and a smaller one called "Rukut Tundun," the woman, or wife of Tundun. The larger one is also called "Grandfather" Weintwin, or Mük-brōgan.³ In this the Kurnai differ from the Murring, who have only one bullroarer, but they agree with several other Australian tribes. I think, but I cannot be sure, that where two bullroarers are used, it indicates ceremonies in which the women take a great part, whereas in tribes where there is only one, as the Murring, the women are totally excluded.

While the novices were thus under tutelage during the day following the sleeping ceremony, and while most of the men were out hunting, the headmen and several others went away to prepare for the great ceremony of the grandfather.⁴ When they were ready, about an hour before sunset, word was brought to the Bullawangs, who took their charges to the appointed place, under the pretext "Let us go for a walk. You must be tired with sitting there all day."

On reaching the place, which was at the edge of an extensive and dense scrub of Tea-tree (*Melaleuca*), with a little open plain of some fifty acres in front, the novices were halted, and made to kneel down in a row, with their blankets drawn closely over their heads so as to prevent their seeing anything. One of the Bullawangs knelt before each, and another stood behind. The principal headman stood near holding his throwing-stick in his hand. This being arranged satisfactorily, the ceremony commenced. The second headman emerged from the scrub at

¹ Dindin = bad, wicked.

² Weintwin = father's father, or father's father's brother.

³ All those who are initiated at the same Jeraeil are Brogan, or Comrade, to each other. Muk-Brogan is the Arch-Brogan, if I may so put it.

⁴ The spot chosen was, as I afterwards ascertained, over 2,000 paces distant from the camp of the Tutnurring. While sitting there talking to the Bullawangs, I several times heard the peculiar screech of the "woman Tundun," when the men who were making them tried one to see if it was satisfactory.

about a hundred and fifty yards distance, holding his bullroarer, a "man Tundun," in his hand, which he commenced to whirl round, making a dull sounding roar. The man immediately following him had a "woman tundun;" and in this way sixteen men came slowly forward, each one, as he came into the open, whirling his instrument and adding to the roaring and screeching din. By the time the last man had marched out into the clear ground the leader had gained a point on the opposite side of the kneeling Tutnurrings, and the performers then halted in a semi-circle, and produced a finale of discordant sounds. When this ceased, the headman ordered the novices to stand up, and raise their faces towards the sky. Then, pointing upwards with his throwing-stick, the blanket was pulled off the head of each boy by his Bullawang, and the eyes of all the novices being directed to the uplifted throwing-stick, the headman said, "Look there! Look there! Look there!" successively pointing first to the sky, then lower, and finally to the Tundun men. Two old men now immediately ran from one novice to the other, saying in an earnest manner, "You must never tell this. You must not tell your mother, nor your sister, nor any one who is not Jeraeil."¹ The old headman then, in an impressive manner, revealed to the novices the ancestral beliefs, which I condense as follows:—

Long ago there was a great Being, called Mungan-ngaür,² who lived on the earth, and who taught the Kurnai of that time to make implements, nets, canoes, weapons—in fact all the arts they know. He also gave them the names they bear.³ Mungan-ngaür had a son named Tundun, who was married, and who is the direct ancestor—the Weintwin, or father's father—of the Kurnai. Mungan-ngaür instituted the Jeraeil, which was conducted by Tundun, who made the instruments which bear the names of himself and of his wife.

Some tribal traitor impiously revealed the secrets of the Jeraeil to women, and thereby brought down the anger of Mungan upon the Kurnai. He sent fire,⁴ which fil'd the whole

¹ In the olden times spears were held pointed at the novices at this juncture to emphasise the threats that were made, should they reveal the mysteries unlawfully.

² Mungan = father, ngaur = our. He has no other name among the Kurnai. In other tribes the Great Supreme Being, besides being called "father," has a name, e.g., Bunjil, Baiäme, Dáramulún.

³ In other tribes, for instance, the Dieri, the Woiworung, and the Murring, the Supreme Being is said to have given them, or ordered them to assume, their "animal names" (totems). In the Kurnai tribes, in which the totems, with the exception of the general male and female Yerung and Djeeetgun, have become extinct, this origin of the names is assigned to what, in default of a more appropriate term, I may call their "personal names"—such as Tulaba, Tankowillin, &c. These names have descended in the agnatic line from unknown times, but not necessarily from father to son.

⁴ Mungan's fire is the Aurora Australis; hence the fear of it shown by the

space between earth and sky. Men went mad with fear, and speared one another, fathers killing their children, husbands their wives, and brethren each other. Then the sea rushed over the land, and nearly all mankind were drowned. Those who survived became the ancestors of the Kurnai. Some of them turned into animals, birds, reptiles, fishes; and Tundun and his wife became porpoises.¹ Mungan left the earth, and ascended to the sky, where he still remains.

From that time, say the Kurnai, the knowledge of the Jeraeil and its mysteries has been handed down from father to son, together with the penalty for unlawfully revealing them, and for breaking the ordinance of Mungan—namely destruction by his fire, or death at the hands of the men to whom his laws have been transmitted.

The novices, having been thus properly instructed, were told to take the tundun in hand and to sound it, which they did with evident reluctance and apprehension.

Before the return to the camp what is called the “opossum game” was played. A young tree was cut down, and trimmed of its branches so as to form a pole about twenty feet long, and perhaps six inches thick at the lower end. This was placed in a hole dug in the ground, a large bunch of leaves being tied to the upper end. It represented a tree, and was held in position by as many men as could get at it, grasping it with one hand, and holding in the other a bundle of leafy twigs. Up this pole one after the other the Bullawangs climbed, touching it only with their hands and feet, imitating the actions of opossums, while the men below rustled their bunches of leaves and shouted “Huh!” This was supposed to represent an opossum hunt. It is interesting as being the only “animal game” in the Jeraeil, and it seems to be introduced without any reason or connection with the other ceremonies. It is, however, noteworthy that the Kurnai say it is done “to amuse the boys,” and this is the reason given by the Murring for the performance of their numerous animal games and dances, which, like this one, take place immediately following the “central mystery.” I regard this “opossum game” as most probably a survival from a time when the Kurnai had a class-system with numerous totems.

The men all now returned to their camps, and the Tutnurring

Kurnai, and their practice of exorcising it by means of the “dead hand.” See “On some Australian Beliefs,” p. 5, “Journ. Anthropol. Inst.,” November, 1883.

¹ These transformed people are called the Muk-Kurnai. The word Muk implies superiority. Thus Lé-en = good, Muk-leen = most good, excellent. The Muk-Kurnai, the ancestors of the Kurnai, are the “eminent men.” I suspect that in these we are near a possible explanation of the origin of totems.

The coast Murring also have a deluge legend, which, *inter alia*, recounts how an eminent man of former times became a porpoise.

to theirs under the charge of the Bullawangs. It was evident, however, that the novices were no longer under such strict supervision as before, they being now in the ranks of men though only so recently admitted.

At about eight o'clock in the evening the Bullawangs took their charges, each carrying a Tundun, for the purpose, as they put it, of "frightening the women." The women and children are always told that, at the secret parts of the Jeraeil, Tundun himself comes down to "make the boys into men."¹ The hideous sounds which the uninitiated may chance to hear from a distance they are told is Tundun's voice, and they are warned not to leave their camp while he is about, lest he should kill them with his spears.

This "frightening the women" by the Bullawangs and the newly-initiated youths is done by walking slowly round the encampment at a distance such that there is no chance of their being seen, or their movements through bushes and over logs being heard by the women and children. They swing their bullroarers as they go. Tundun is thus supposed by the women and children to be walking round the camp before returning to the place whence he came. At the Jeraeil I am describing the novices thoroughly entered into the fun of frightening the women; and, having got over their awe of the bullroarers, they made an outrageous noise with them. The moment the roaring and screeching sounds were heard, there was a terrible clamour of cries and screams from the women and children, to the delight of the novices, who now in their turn aided in mystifying the uninitiated. It sometimes happens that, during this nocturnal perambulation, one of the bullroarers becomes detached from its string, and is thus lost. If, perchance, it is afterwards picked up by a woman or a child, their curiosity is satisfied by the statement that it is a "paddle belonging to Tundun," which he is supposed to have dropped in returning home. The shape of the bullroarer is much that of the little bark paddle which the Kurnai use when sitting down in their canoes.

5. "*Giving the boys some Frogs.*"—After the revelation of the central mysteries of the Jeraeil, the novices, being now enrolled among the men, are not kept with such strictness as before. They are allowed to go out in company with their Bullawangs

¹ Such tales as this, I doubt not, are everywhere told to the women. In the Omeo, Maneroo, and coast tribes, Daramulun is said to come down and himself to knock out the boy's tooth. In a Queensland tribe the old wizards are said to swallow the boys, and bring them up again as young men. Mr. Cameron has told me that in the tribes about the junction of the Murrumbidgee and Murray rivers, the novice is said to be met by some supernatural being who kills the boy, and brings him back again to life. No doubt in all ages such yarns have been told to outsiders about the Mysteries,—such as the Mason's "Frying-pan."

to seek for such animals as are permitted them for food; and this occasion is improved by their mentors, who deliver a peripatetic lecture on their lawful and their forbidden foods. When in camp the instruction continues generally as to the duties now devolving upon them by reason of their having reached manhood. I may now, as at a convenient time, notice what these rules of conduct are—the principal ones at least, for to enumerate them all would require an essay on the tribal and social life of the Kurnai. The youths are instructed—

1. To listen to, and obey the old men.
2. To share everything they have with their friends.
3. To live peaceably with their friends.
4. Not to interfere with girls or married women.
5. To obey the food restrictions, until they are released from them by the old men.

Some of the rules which I heard impressed upon the Tutnurring are curious. They were not to use the right hand for anything, unless told to do so by the Bullawang. A breach of this rule, they were informed, would certainly cause Gūmil—that is to say, some magical substance, such as Būlk¹—to get into the offending member, which would require the doctor to extract it. They were cautioned not to go near an enceinte woman, nor to let a woman's shadow fall across them, nor to permit a woman to make bread² for them, under the certainty that such acts would cause them to become “thin, lazy, and stupid.” But a woman might cook an opossum for the novice, provided it were a male, and the entrails had been extracted before she touched it.

The rules as to food animals are as follows:—The novice may not eat the female of any animal, nor the emu, nor the porcupine; but he may eat the males of the common opossum, the ringtail opossum, the rock wallaby, the small scrub wallaby, the bush-rat, the bandicoot, the rabbit-rat,³ the brushtail,⁴ and the flying mouse. He becomes free of the flesh of the forbidden animals by degrees. This freedom is given him by one of the old men suddenly and unexpectedly, smearing some of the cooked fat over his face.⁵ In what manner the

¹ As to Bulk, see “Kamaroi and Kurnai,” p. 251.

² This prohibition as to bread has been transferred from the prohibition as to the dura which was formerly much used, and which was cooked by baking in the ashes.

³ *Perameles lagotis*.

⁴ *Phascogale penicillata*.

⁵ One of the men attending this Jeraeil had never yet been made free of some food animal, I forget which, but it was one the eating of which, for some reason or other, he believed would be injurious to him. Being very strong and active, and always on his guard, he had managed to escape whenever the old men had tried to smear his face with its fat.

Tutnurring become free to eat the flesh of the "old man kangaroo" I shall presently show.

The next stage after "Showing the Grandfather" is called "Giving the Tutnurring some Frogs." This is a cryptic way of referring, under the name of "Frogs," which are swamp-dwellers, to the Dūra,¹ a food plant which grows abundantly in the lagoons and swamps of Gippsland. In this ceremony the women again take a prominent part. But the novices are now with the men, and not, as at first, together with the Kraun, under the direction of their mothers.

In preparation for this ceremony the women have gathered some of the rhizomes of the Dura, and baked them in the ashes as usual when preparing them for food. The Tutnurring having been painted by their guardians, each one with two bands of red ochre down each side of the nose, were told to "come and eat some frogs." They were taken to the open space in the Jeraeil ground, and there placed in a row, the Bullawangs and other men being grouped behind them, holding branches in their hands. The women then came from the main camp, bringing with them the Kraun whom they placed in a row facing the novices, but about a hundred and fifty yards distant from them. The mothers and the other women stood behind. Each Kraun held in her hands a pole about ten feet long, at the end of which was tied a bunch of the cooked rhizomes of the Dura. They shouted "Come here, and we will give you your food." Each novice had been placed fronting his Kraun, and being instructed what to do, ran forward, seized the Dura, and throwing it down on the ground, ran back to the Jeraeil camp at the top of his speed. The men, who had raised shouts of "Huh!" and rustled their boughs, opened their ranks to let the Tutnurring through, and then followed them shouting to the camp. One of the Bullawangs, who had been told off for the purpose, gathered up the Dura, and brought it to the Jeraeil ground, where it was divided, and eaten by all present. The women returned to their camp.

6. "Seeing the Ghosts."—At this stage the Tutnurring are told to "come and see the ghost."² For this ceremony it is necessary to procure a large "old man kangaroo;" at the Jeraeil which I am describing two days were fruitlessly spent by almost all the men ranging over miles of country in search of the wanted Brangula jira.³ I found out afterwards that all the "old men" had been shot for their skins by a party of kangaroo hunters (white men) who had been encamped for some time at a place near by. The

¹ *Trypha angustifolia*, Linn.

² Mrart = ghost. See "Kamilaroi and Kurnai," p. 246.

³ Brāngūla = male, Jira = kangaroo.

Jeraeil therefore came to a standstill, until one genius suggested that a male wallaby should be substituted. The old men having approved, the difficulty was got over. This "Brangula," having been shot and roasted, was cut up, and the pieces were laid on the top of a large fallen tree at a little distance from, but within hearing of, the camp, where the novices were still under the careful tuition of their guardians. When all was prepared, the men began to shout, as if driving game, to beat the logs and tree stems with clubs and tomahawk heads, and in fact to represent a "kangaroo drive." The Tutnurring being carefully shrouded in their blankets, were told to come and see where "the ghosts had caught a kangaroo." On reaching the spot where the men were still imitating the driving of game, the novices were placed in a row close to the log on which the game was displayed. The noise now ceased, and the headman, holding his throwing-stick pointing to the sky, told them to look up; and their blankets being thrown off, he pointed successively three times to the sky, to the horizon, and to the meat on the log, saying "Look there! Look there! Look there!"

The novices were now seated on the log, each one having a pile of meat beside him. The headman gave some of this to them, and the rest was eaten up by the other men.

In this way the youths were made for ever free of the flesh of the kangaroo. It was explained to me that this ceremony is a most important one; for, were it not carried out, the youth would never be able lawfully to eat the flesh of the male kangaroo, as necessary qualification can be acquired no otherwise than by eating the flesh in common with all the men who are present at the Jeraeil.

7. *The Water Ceremony.*—After the "ghosts" had killed and eaten their kangaroo, the novices retired in company with their Bullawangs and some other men. All the rest of the people also left the camp, and went by another route to the place where the final ceremony was to take place. This ceremony is public; and not only are the women present, but the novices who after it become Jeraeil and no longer Tutnurring, stop in the young men's camp¹ for the day, or until their guardians are ready to take them away.

This final rite, which is the termination of the Jeraeil, was on the banks of a rather deep dry creek, running through the level country near the Thomson River. The mothers of the novices stood in the bed of the dry creek, each having a vessel full of water before her on the ground. The novices had encamped

¹ The young men (Brewit) and the married men who have not their wives with them, always encamp together at some distance from the camps of the married men.

the night before some miles away down the river, and now being led by their Bullawangs, followed up the winding bed of the creek in single file, and out of sight, until within a hundred yards of where the mothers stood. As they came up, each woman stooped to drink, and her son splashed the water over her with a stick which he held in his hand. She, appearing enraged, filled her mouth with water several times, and spilt it over his face and head. The novices then walked off to the young men's camp, and the women went to their own. One of them was crying at the loss of her son.

Though the "Water Ceremony" ends the Jeraeil, it does not terminate the probation which the youths have to undergo. They must spend a time, which may be of months' duration, away from their friends under the charge of their Bullawangs in the bush. In short, they must remain away gaining their own living, learning lessons of self-control and being instructed in the manly duties of the Kurnai, until the old men are satisfied that they are sufficiently broken in to obedience, and may be trusted to return to the community. In the present instance the old men had determined at the Jeraeil that the novices should remain at least a month away, for the reason that, as they expressed it, having been so much with the whites, the lads had "gone wild." However, I have heard since that they relented, and permitted the youths to return at an earlier date. Under the strict rules of the olden time this would not have been the case. An old man said to me, "It is not much use forbidding them to eat things. They can get plenty of food—the Jeraeil has nothing to do with beef and damper."

Notes suggested by a comparison of the Kurnai Jeraeil with the Kuringal of the Murring.

It was very interesting to note the similarities and the differences between the Jeraeil and those initiation ceremonies of which the Kuringal is the type. The Jeraeil is held for the purpose of endowing the youths of the tribe with the privileges of manhood, and of laying upon them its duties. This is the case with the Kuringal also; and in the Kurnai tribe, as in the Murring, it is the local organisation which not only conducts the ceremonies, but also calls the assembly. As far as I can learn, it has always been the case with the Kurnai that the Jeraeil has been called together either by one of the two clans which occupy the north-eastern half of the country, or by one of the two which occupy the south-western half. In other words, leaving out of the account the unqualified Krautun clan—one moiety of the tribe has invited the other to attend. Moreover,

each moiety has initiated the youths of the other. This was the case with the Coast Murring also. But, on comparing the Bürbung of the Wirádjeri tribe (New South Wales) a distinction becomes evident, not in principle but in detail, consequent upon the complete social organisation into class-divisions and totems which that tribe still has in addition to its local organisation and which is more or less decadent in both the Kurnai and the Murring. The Burbung, as I have elsewhere stated, was called together by that totem to which the principal headman belonged. On this view we see that the primary class-division to which the totem in question belongs is, in fact, the moiety of the community which in this case calls together the entire community for the initiation ; and it is the second moiety—that is to say, the other primary class-division—which attends. Finally, in this case, the initiation is carried out by the men who represent the local organisation, and it only requires the class and totemic divisions to die out for the local organisation prominently, and indeed necessarily, to take the control of all tribal affairs.

The Jeraeil and the Kuringal resemble each other in being intended to impress upon the youths a sense of responsibility as *men*, to implant in them by means of impressive ceremonies the feeling of obedience to the old men, and to the tribal moral code of which they are the depositaries, and to ensure that, before the youth is permitted to take his place in the community, join in the councils, and marry, he shall be possessed of those qualifications which will enable him to act for the common welfare, and not only to support himself and a wife and family, but also to contribute a fair share to the general stock of food, to which his relatives are entitled in common with himself.

The differences between the Jeraeil and the Kuringal are mainly in the details by which the principles underlying the initiation ceremonies are worked out. With the Kurnai, the headman was not, as with the Coast Murring, almost necessarily the head wizard also. Indeed, as I have already noted, the Kurnai Wizard was either, as the Birra-ark, a harmless bard, seer, and spirit medium, or as the Mulla-mullung, a disease-producing or a healing doctor ; but in neither character was he necessarily the headman. This may perhaps go to explain why the Kurnai Jeraeil is wanting in those remarkable magic dances and performances which are so marked a feature in the Kuringal of the Murring.

Both ceremonies mark the separation of the youth from his mother's control. With the Kurnai it is true the women take part in the ceremonies, with the exception of the "central mysteries;" but the renunciation by the boy of the companion-

ship of his sister, and of his mother who is with her at the Dura-rite, together with the renunciation by the mother of her former control over her son by the Water Ceremony, shows very clearly what has been the intention of those who originally constructed the ceremonies.

In all the initiations the intention of the food rules seems clear to me. The novice is placed, while surrounded with plenty, in a position of actual scarcity; and his feelings of self-restraint and of self-reliance are called forth under the stimulus of future reward, and the dread of supernatural punishments of whose reality he has not the faintest doubt.

I doubt if there is any rule of conduct under which the novice is placed which is not directly intended to some end beneficial to the community, or believed to be so. The rule as to keeping far from even the shadow of a woman, is clearly intended to prevent, by supernatural terrors, any interference with women, which, as "Love laughs at locksmiths," the old men knew well not even the dread of the spear or the waddy would suffice to prevent.¹

Perhaps the most interesting comparison between the Jeraeil and the initiations of those tribes which I treated in my former paper, arises out of the secret beliefs which are imparted to the young men on these occasions. The attributes and powers of Mungan-ngaur are precisely those of Daramulun, and of Baiame, who also are called "our Father" by the tribes believing in them. The attributes of these Supreme beings are those of unbounded power, including, of course, the most potent magic, which is imparted by them to the wizards; the power of "doing anything and going everywhere," and of seeing all that is done by the tribesmen. Correlated with these is the power and the will to punish for breaches of the tribal laws. In all these instances the Great Father of the tribe, who was once on earth, and now lives in the sky, is rather the beneficent father, and the kindly, though severe, headman of the whole tribe—of men on earth and of "ghosts" in the sky—than the malevolent wizard, such as are other of the supernatural beings believed in by the Australian blacks.² It is also very interesting, and perhaps indicative of great antiquity, that this identical belief forms part of the central mysteries of the initiations of a tribe so isolated as the Kurnai, as well as of those of tribes which had free communication one with another. It must be remembered that none participated in the Jeraeil but Kurnai.

¹ An additional motive for these rules is evidently the advantage which the old men reap from them.

² When I wrote of Brewin in my paper on "Some Australian Beliefs" (p. 10), I was not aware of the doctrines as to Mungan-ngaur. These the Kurnai carefully concealed from me until I learnt them at the Jeraeil.

Decadence of Initiation Ceremonies in other Victorian Tribes.

When writing formerly of the Australian initiations, I said that I had been able to obtain very little information as to those of the tribes of the western and northern parts of Victoria. Since then, however, I have been to some extent more successful, and I have subjoined the main facts for comparison with the Jeraeil and the Kuringal.

Two old men, who were not Kurnai, accompanied me to the Jeraeil, and were permitted to witness the ceremonies, though not actually to take part in them, one of them being the "tribal mother's brother" of a Kurnai man. One of them is of the Woiworung tribe of the Yarra River, and the other belongs to the Thägun-wörung¹ of the Upper Campaspe. These men, after witnessing the Jeraeil, gave me a description of the analogous ceremonies in their own tribes, and in those also which once occupied the Western Port district between Melbourne and Gippsland.²

In the Woiworung country the ceremony was called Jibauk. When a boy was about ten or twelve years of age—when his whiskers began to grow—his parents, or his relatives, or the people in the camp, would think it only decent and proper that he should no longer run about naked. On some day, which had been fixed, his Guritch, or his Kangün,³ would tell him that he must be made Jibauk. The boy, being covered up with a rug drawn over his head, was taken from the camp for some little distance to the place where he was to be "made a young man." But, before this time, his parents sent him to live in the "young men's camp." On his arrival at the Jibauk camp, he and the other boys who were to be made young men were prepared by their Guritch. A bough-yard, or breakwind, was made at a distance of some three hundred yards from the main camp, and a large fire was lighted in front of it. The boy being naked was clothed with as many of the men's belts and kilts as could be collected in the camp—so many sometimes that he was completely covered with a mass of them from the waist down. His hair was then cut quite close, excepting a ridge left like a cocks-comb across his head from front to back. His head, face, neck, and shoulders were plastered with a thick coat of mud. A band of white pipeclay was painted across his face from ear to

¹ Thagun = no. In this dialect the extreme frequency of the sound *th*, as in "the," gives it, when spoken, a curious lisping sound. It is, however, only a variation of Woiworung.

² According to these men, the ceremonies which they described as Jibauk were common to the tribes living between Melbourne, Geelong, Bacchus Marsh, Castlemaine, Sandhurst, Murchison, and Benalla.

³ Guritch = sister's husband, or wife's brother. Kangun = mother's brother.

ear, and another from his belt at the back, over his head, down the face and chest to the belt in front. He carried a bag slung round his neck, and in it he had a live opossum which he had caught, and from which he had plucked the fur as if for cooking. He never moved away from the Jibauk place without this bag containing the opossum and a fire-stick. When the opossum died, he had to go away and catch another to replace it. The Jibauks were not allowed any clothing other than the kilts, and they slept round the fire by the bough enclosure. All the young men of the encampment, together with the guardians of the Jibauk, kept them company. The lads obtained their food by going the rounds of the camps in company with the Guritch; and, opening their bags, they said to the people they called upon, "Have you anything to put in here?" The food thus procured was all they got, and it was not much.

When the boy's hair had grown about two inches in length his probation was over. The Jibauk camp was now shifted on successive days nearer and nearer to the main camp, until it was quite close. During this time each Guritch had been preparing an opossum rug, which he now gave to the boy under his charge; who, being dressed in the full male costume, was led by his guardian to the married men's camps successively, where he was received with expressions of rejoicing. The Jibauk was thus introduced to the community in the character of a man. Several evenings of singing and dancing finished the ceremony.

The Jibauk was not during this time specially instructed in the tribal laws and beliefs, because this was done previously by the father, or father's brother,¹ but he was told what animals he might or might not eat. The forbidden food included emu, black duck, musk duck, flying tuan, iguana, porcupine. He might eat the common opossum, the ringtail opossum, bandicoot, wallaby, kangaroo, wombat, native bear, swan, teal, and all fish. From time to time the young man was made free of the forbidden food by having a piece of the cooked meat given him to eat.²

In the Western Port district the equivalent of the Jibauk was called Tálangún. All that was done was this: The boy was taken by some of the men, who dressed him in the male attire, and he was made free of the forbidden food animals as soon as the men could catch them. There were no other ceremonies of initiation of any kind.

These statements were made to me by the two old men

¹ See "Notes on some Australian Beliefs," p. 9. "Journ. Anthropol. Inst.," November, 1883.

² Sometimes the meat was handed to him on the point of a stick.

before mentioned, the survivors of the Melbourne and the Campaspe tribes.¹ I found them to be trustworthy in statements which I could check by other information, and I think that their accounts of the Jibauk and Talangun may be relied upon. The fact that in the Western Port district, the bull-roarer, which is elsewhere regarded with reverential awe, was a child's plaything, seems to be strong corroboration of the statement that the tribes there had no secret rites of initiation.²

The only further information which I have hitherto been able to obtain as to the initiation of any other Victorian tribe relates to the Wótjo-bálluk of the Lower Wimmera River.³ This tribe, which, together with other allied tribes, formed what I may call a "nation," extended over a great part of North Western Victoria, but not quite as far as the Murray River. The Wotjo-balluk, according to the information given me by two men independently of each other, had no ceremonies of initiation beyond what I am about to describe. The boy, at the age of puberty, was "caught," as both my informants put it, by his Ganitch,⁴ who took him to his own camp. He there seated him before a large fire, tied kangaroo sinews tightly round his upper arm, and rubbed him all over with grease and red ochre. He then dressed him in full male costume. For several months the boy was kept and instructed by his Ganitch, who also during this time waited upon him in everything, providing him with food, and even carrying him on his shoulders when he went from the camp.

The absence of initiation ceremonies in this tribe is brought into view by the fact that some of the men of that section of the tribe to which my oldest informant belonged intermarried with the Murray River tribes, and occasionally attended their initiations. My informant, who belonged to near Lake Hindmarsh, gave me an account of the Pürpung (initiation) of the Tátáthi tribe, which he had attended, and which was substantially the same as the Kuringal already described by me.

Judging from my present information, it seems that Umbara, the bard of the Coast Murring, was right when, spreading his hands out as describing the course of the Murray River, he said "On this side (the right hand) the Kuringal goes all the way,

¹ Berak, the Woiworung man, remembered seeing Buckley, the "wild white man," before Port Philip was settled.

² In reading Buckley's narrative, as recorded by Morgan, I have felt surprised that there should be no mention of ceremonies such as the Jeraeil or Kuringal. This appeared to me remarkable, because Buckley, as the reincarnated Murrangurk, would be one of the initiated. The account of the Jibauk, now given by Berak, suggests that the tribes with whom Buckley lived did not, any more than the Woiworung, possess secret ceremonies of initiation.

³ Wotjo = man, balluk = people.

⁴ Ganitch = sister's husband, or wife's brother.

but on this side (the left hand) there is *nothing*." Compared with the highly dramatic and impressive ceremonies of the Kuringal (or Burbung) those of the Jeraeil are poor in effect, while the Yarra, Campaspe, and Wimmera tribes seem to have possessed no more than the remains of former more complete ceremonies. The opinion which I have formed, after considering all the evidence now before me, is that the tribes in Victoria had in a great measure lost the initiation ceremonies, and that the Kurnai Jeraeil was in a state of decay. That such ceremonies may be totally lost is proved by the fact that the Krauatun clan of the Kurnai neither has any of its own, nor participates in those of the other Kurnai clans.

Thus far, I am not able to offer any satisfactory reason for the loss of such ceremonies. Looking at that part of the Australian field covered by the tribes dealt with in this paper, and in my former memoir on the Kuringal of the Murring, the temptation is strong to attribute it to the advance into agnation and the consequent decay of the class divisions. The Victorian tribes, as a whole, were in this advanced state, while those on the northern side of the Murray River had still a vigorous social organisation in classes with uterine descent. But, taking a wider view of the whole field of evidence, this suggestion loses its strength; for I find that initiation ceremonies of very full character occur in Queensland among tribes who have marked agnatic features with (as far as I can yet ascertain) a total absence of class-divisions and totems.

DISCUSSION.

Mrs. CAREY-HOBSON remarked that the "Bull-roarer" of Australia seemed to her to have its representative in the instrument called "*Nodiuu*" in use among the Amakosa Kafirs of South Africa. She was not able to discover that it held any significant place in the rites of initiation, but she had, while riding in Kaffirland, seen in the near distance a party of whitened "*Abak-wéta*," and distinctly noticed that one of them was creating a loud buzzing noise by rapidly whirling some small instrument above his head, and this she took to be identical with the *Nodiuu*.

JANUARY 13TH, 1885.

Professor W. H. FLOWER, LL.D., F.R.S., President, in the Chair.

The Minutes of the last meeting were read and signed.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

- From His Highness PRINCE ROLAND BONAPARTE.—*Les Habitants de Suriname.* A collection of Ethnological photographs.
- From ADMIRAL F. S. TREMLETT.—*Fouilles Faites à Carnac.* Par James Miln.
- From PROFESSOR AGASSIZ.—Annual Report of the Curator of the Museum of Zoology at Harvard College for 1883–4.
- From the DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.—*Mineral Resources of the United States.* By Albert Williams, jun.
- From the STATE BOARD OF HEALTH, MASSACHUSETTS.—Fifth Annual Report.
- From the AUTHOR.—On some Curious Excavations in the Isle of Portland. By T. V. Holmes, F.G.S.
- *Stoechiological Medicine, and its applications to Diseases of the Lungs and other organs.* By John Francis Churchill, M.D.
- *Éléments d'Anthropologie Générale.* Par le Dr. Paul Topinard.
- *Éléments d'Anthropologie.* Par Alphonse Cels.
- *Un Dépot de Flèches à Tranchant Transversal dans les Stations du Petit-Morin.* Par M. le Baron de Baye.
- *State Measures for the Direct Prevention of Poverty, War, and Pestilence.* By a Doctor of Medicine.
- *On Yoden, a mediæval site between Castle Eden and Easington.* By Robert Morton Middleton, jun., F.L.S., F.Z.S.
- *The Higher Branch of Science; or, Materialism refuted by Facts.* By H. J. Brown.
- *Sur une Méthode à suivre dans les Études Préhistoriques.* By Eugéne van Overloop.
- *Documents pour servir à l'Anthropologie de la Babylonie.* Par Dr. E.-T. Hamy.
- From the DEUTSCHE GESELLSCHAFT FÜR ANTHROPOLOGIE.—*Archiv für Anthropologie.* Band XV, Part 4.
- *Correspondenz-Blatt.* October, 1884.
- From the ACADEMY.—*Atti della R. Accademia dei Lincei.* Vol. VIII, Fas. 16.
- *Proceedings of the Academy of Natural Sciences of Philadelphia.* Parts 1, 2, 1884.

- From the ASSOCIATION.—Proceedings of the Geologists' Association. No. 7, 1884.
- Journal of the Royal Historical and Archæological Association of Ireland. No. 58, April, 1884.
- From the CLUB.—Proceedings of the Berwickshire Naturalists' Club. Vol. X, No. 2.
- From the SOCIETY.—Bulletin de la Société de Borda, Dax. No. 4, 1884.
- Proceedings of the Royal Geographical Society. January, 1885.
- Proceedings of the Society of Antiquaries. Vol. X, No. 1.
- Proceedings of the Asiatic Society of Bengal. Nos. 8, 9, 1884.
- Journal of the Asiatic Society of Bengal. No. 260.
- Journal of the Society of Arts. Nos. 1673–1677, and Index to Vols. XXI to XXX.
- From the EDITOR.—The American Antiquarian. Vol. VI, No. 6.
- Journal of Mental Science. No. 132.
- Revue d'Ethnographie. No. 5, 1884.
- "Nature." Nos. 789–793.
- Revue Scientifique. Tom. XXXIV, Nos. 24–26; Tom. XXXV, Nos. 1, 2.
- Revue Politique. Tom. XXXIV, Nos. 24–26; Tom. XXXV, Nos. 1, 2.
- The Illustrated Science Monthly. No. 14.
- Science. Nos. 95–98; and Almanac for 1885.

The election of Dr. DANIEL WILSON, of Toronto, as an honorary member, and of W. E. DARWIN, Esq., and Mons. A. ROUFFIGNAC as ordinary members, was announced.

Professor FLOWER exhibited a photograph of a "tailed" boy from Saigon, presented by Dr. Norman Moore.

Professor THANE and Mr. OLDFIELD THOMAS made some remarks on this photograph.

Dr. J. G. GARSON exhibited some composite photographs of skulls taken by Mr. Arthur Thomson.

Mr. GALTON, in reference to this exhibition, expressed much pleasure at his method of composite photography having been adopted both by Mr. Thomson and by Dr. Billings for the determination of typical forms of skulls. At the same time, he was bound to remark that that particular adaptation of the method was a severe strain on its powers, inasmuch as the feature to be determined was the outline of a large object occupying the outer edge of the plate, in which misfits were necessarily much more conspicuous than they were in the eyes, nose, and mouth of portraits, which were situated near together in the centre of the plate.

The following paper was then read by the author:—

ACCOUNT of a COLLECTION of HUMAN SKULLS from TORRES STRAITS. By OLDFIELD THOMAS, F.Z.S., M.A.I., Natural History Museum.

[WITH PLATES XIV AND XV.]

THE present fine collection of crania from Torres Straits was obtained in Jervis Island, in the western part of the Straits, by the Rev. S. MacFarlane, a missionary whose name is well known in connection with natural history collecting, and from whom we may yet hope to receive many more accessions to our knowledge of the inhabitants of the region in which he labours. The following is his account of the origin of the collection:—

“The skulls are from the sacred house of the Jervis Islanders, which is situated on an islet close by. They are all the skulls of enemies from the neighbouring Banks, Mulgrave and Dauan Islands, the last named being close to New Guinea. The habit of these skull-hunters being to fall upon an unfortunate man and his wife whilst out fishing, or upon a poor defenceless woman who had gone to her plantation for food, will account for the full proportion of female skulls amongst the collection.

“The natives of Jervis, Banks and Mulgrave Islands are in appearance much like Australians.

“The skulls are preserved by being rubbed with a peculiar kind of earth, obtained from Laibai and New Guinea, from fresh water swamps; it is of a light colour until burnt, when it becomes bright red.”

In all, the collection consists of 49 crania, a number which, even when reduced to 38, owing to some being immature and others of doubtful sex, is still sufficient to give the resulting average measurements and indices a considerable value for the definition of the cranial characters of the low Australoid natives of the Torres Straits Islands.

Of the 49 skulls 7 are young, the basilar suture not having closed; 19 appear to be males, 19 females, and 4 are of doubtful sex. There are also with the crania 82 mandibles, evidently belonging to the same series, but which can in but very few instances, owing to their want of teeth, be referred to their proper crania.

The skulls, as noticed by Mr. MacFarlane, have all been painted a deep vermillion colour, which comes off upon handling in the form of a fine red powder. One, of doubtful sex, has an artificial wooden nose, and several others have evidently but recently lost similar appendages. It is unfortunate that nearly

all have lost the greater part of their teeth, none having incisors, and only 8 out of the 42 adult skulls being available for Professor Flower's dental index, taken on the premolars and molars combined.

On the whole, although differing considerably among themselves, the skulls are markedly Melanesian and even Australian in type, being characterised by their long, narrow, and rather low brain-cases, low orbits, heavy, frowning brow-ridges, short and little prominent nasal-bones, small nasal spines, long palates, large teeth, and considerable prognathism. This last character, in fact, is so strongly marked that their gnathic index much exceeds that of any other race in the world of which it has been recorded. On the other hand, these skulls have comparatively narrow noses, their average nasal index being some 2 or 3 per cent. lower than those of such pure races as the Fijians, Australians or Tasmanians. This difference is perhaps partly due to the slight admixture of Polynesian blood which is known to have taken place in this region. Indeed, one skull, Male No. 19, shows so many strictly Polynesian characters that I have thought it better to exclude it from the general averages, although that it is not a pure Polynesian is shown by its well-marked prognathism, a point in which the Polynesian element seems in no way to have affected any of the skulls.

The majority of the skulls are quite of normal shape, but five of the male skulls, among which is the one of Polynesian type, just referred to, have undergone considerable occipital flattening, probably owing to sleeping on a hard wooden pillow. These distorted crania have been omitted from such averages as refer to the shape and size of the brain case, but have been included in the facial averages and indices.

Wormian bones are both few and small, while epipterics are present on one or both sides of 9 of the 42 adult skulls. The squamosal articulates with the frontal in 4 males, 5 females, 2 of doubtful sex and 1 young, making a total of 12 out of 49. One skull only, Male No. 18, is metopic. Female No. 27 has a well-marked interparietal bone. Inia as a whole are small, especially when contrasted with the heavy and prominent transverse occipital ridges.

Passing to the various cranial measurements and indices in detail, we find first that the capacity of the brain-case averages as follows:—

$$\begin{array}{ll} \delta \text{ (17 individuals)} & 1422.5 \text{ cubic centimeters} \\ \varphi \text{ (19 ")} & 1258.0 \end{array} \quad \left. \right\} \text{ Both sexes (36) } 1335.7$$

the female average being 88.4 per cent. of that of the males. The extremes are—Maxima, ♂ 1591, ♀ 1447, and Minima ♂ 1245 and ♀ 984. The Polynesian male skull, No. 19, has a

capacity of 1614 c. cm., nearly 200 above the average, and 23 above the highest of the true Melanesian males.

The *cephalic index* shows that the skulls are as a whole markedly dolichocephalic, the averages being—

$$\begin{matrix} \delta \text{ (14)} & 68.3 \\ \varphi \text{ (19)} & 70.1 \end{matrix} \} \text{ Both sexes (33) } 69.4.$$

This index is lower than any in Broca's long list,¹ but is surpassed by that of the pure-blooded "Kai-Colo" Fijians, as given by Professor Flower,² who have an index of only 65.6, as recalculated on the glabella-occipital length, to correspond to the present and more usual manner of taking the index.

Male skull No. 1 has an index of 61.9, that of the narrowest headed Fijian being 61.6. The lowest female index is 64.7 in No. 25. On the other hand, the highest normal indices are ♂ 74.0 and ♀ 75.9. The male, more or less Polynesian skull No. 19, has an index of 81.2, and the four skulls showing occipital flattening have indices ranging from 74.9 to 81.8. The actual average greatest breadth is only 127 mm., that of the Fijians being 125.8, and the lowest in Broca's list,³ that of 18 Hottentots, being 130.0.

Altitudinal index:—

$$\begin{matrix} \delta \text{ (14)} & 71.1 \\ \varphi \text{ (19)} & 72.3 \end{matrix} \} \text{ Both sexes (33) } 71.8,$$

which is 103.4 p.c. of the average cephalic index.

The *fronto-zygomatic index*,⁴ in which the bi-zygomatic breadth is taken as 100, and the index formed by the stephanic breadth, is as follows:—

$$\begin{matrix} \delta \text{ (13)} & 80.7 \\ \varphi \text{ (18)} & 84.3 \end{matrix} \} \text{ Both sexes (31) } 82.8.$$

This represents a highly phænozygous type of skull, since in all skulls with indices below 90, the zygomata may be seen beyond the brain case, when the skull is held out at arm's length. It is interesting to notice the striking difference between the males and females, a difference evidently owing to the greater development in the former of the masticating

¹ "Review d'Anthrop.," vol. i, p. 385, 1872.

² "Journ. Anthropol. Inst." vol. x, p. 157, 1880.

³ "Bull. Soc. d'Anthrop.," (3) vol. ii, p. 806.

⁴ Cf., Topinard "Elém. d'Anthrop. Gen." p. 934, 1885, and Garson "Journ. Anthropol. Inst.," vol. xiii, p. 390, 1884. I should have preferred to take this index with the stephanic breadth as a base, the bi-zygomatic breadth forming the index; but M. Topinard has indexed such a large number of skulls, and has obtained such important results, both from this index itself, and from the relation it bears to another obtained by a comparison between the bi-gonial and bi-zygomatic breadths, that it would now be inadvisable to reverse the method of taking the index.

muscles connected with the zygoma. Some instances in other races of this index, taken by Professor Topinard, are as follows:—

♂ Parisians (117)	90·7	Australians (55)	81·3	New Caledonians (70)	77·2
♀ " (83)	91·7	" (23)	86·8	" (10)	79·7

The orbits, as in all the Melanesian races, show very markedly the differences between the sexes, the indices being—

♂ (18)	74·6	}	Both sexes (37)	80·2
♀ (19)	85·4			

In the males the orbits are long and low, and have enormously thickened brow ridges, and their index is exceedingly microsome, being lower by no less than nearly 10 per cent. than the Fijians, and by 2 per cent. than the male Tasmanians recorded in Professor Flower's catalogue.¹ Broca's measurements are taken in such a manner as to slightly reduce the resulting indices, but nevertheless no index given by him equals the present, his four lowest being—9 Guanches of Teneriffe 76·5, 5 Tasmanians 78·3, 10 Australians 78·8, and 22 New Caledonians 78·9.²

In the females the orbits are comparatively high and rounded, though some of the skulls have indices as low as many of the males. Their average index (85·4) shows an increase of no less than 10·8 per cent. on that of the males, a fact necessitating a modification of Broca's statement that the female index never surpasses that of the males by more than 4·3 per cent., and showing, at least in the lower races, that characters founded on the orbital index are almost worthless unless sex is taken account of. The sexual difference in the case of Professor Flower's Fijians was 6·5 per cent.

Passing to the highly important *nasal index* we find it a follows:—

♂ (18)	53·4	}	Both sexes	53·9
♀ (19)	54·5			

This index, perhaps owing to an admixture of Polynesian blood, is decidedly lower on the average than is usual among pure Melanesian races. The breath of the nose among the present series varies, however, more than any other character, some, e.g., Male No. 1, attaining the high index of 62·3, and Female No. 34, 62·5, while others are as low as 47·1 (♂ No. 18) and 45·8 (♀ No. 20), not to speak of the more distinctly Polynesian skull ♂ No. 19, which has an index of only 40·0. The females are, as a whole, in this character as in many of the others, both more uniform and more markedly Melanesian than the males. Throughout the series the form of the lower margin of the nasal aperture is of the low simian type described by Professor Flower as occurring in the Fijians, and so characteristic

¹ Cat. Coll. Surg., vol. i, p. 255, 1879.

² C. R. Ass. Franç. Lilloi., p. 693, 1874.

of the lowest races of man. Without exception, the ridge present in the white races at the lower edge of the opening is quite effaced, and the floor of the nasal chamber passes insensibly into the anterior surface of the alveolar process. On this account I have been quite unable to take with any satisfaction the usual measurement "height of alveolus," owing to the impossibility of finding the upper measuring point. In fact, in many of the skulls the measurement would be rather the *length* of alveolus, owing to the extreme forward projection of the jaws. From the useful measurement "Naso-alveolar height of face," however, the alveolar height can be approximately calculated by subtracting from it the height of the nose.

The *nasal bones* are short, rounded in front, and broad below. Their breadth at the nasion is very variable, being in some nearly as much as at their lower edge, and in others only four or five millimetres. One skull, ♂ No. 1, has nasals only 13 mm. in length along the suture, the rest averaging from 17 to 20. The nasal spine is always feebly developed, either Nos. 1 or 2 of Broca's scale scarcely ever equalling No. 3.

Naso-malar index.—

The relative anterior projection of the nasion and central line of the face as compared to the external margin of the orbit has always been recognised as an important racial character, although but few attempts have been made to estimate it accurately. For this purpose Professor Flower has invented the "naso-malar angle,"¹ which would express the relation most satisfactorily if it could always be taken with accuracy and in the same manner by different observers; but unfortunately this is not the case, as with the utmost care different measurements of the very same skull vary very considerably, owing to slight differences in the manner of holding the goniometer and the difficulty of always placing its limb on the same spots on the malars.

I purpose now, therefore, as has been done in several other cases lately, to substitute for this angle, which necessitates the use of a goniometer, a numerical index, which will, I believe, show with very considerable accuracy the projection of the nasion beyond the malars, and will at the same time obviate the use of another instrument in addition to the ordinary sliding compass and measuring tape.

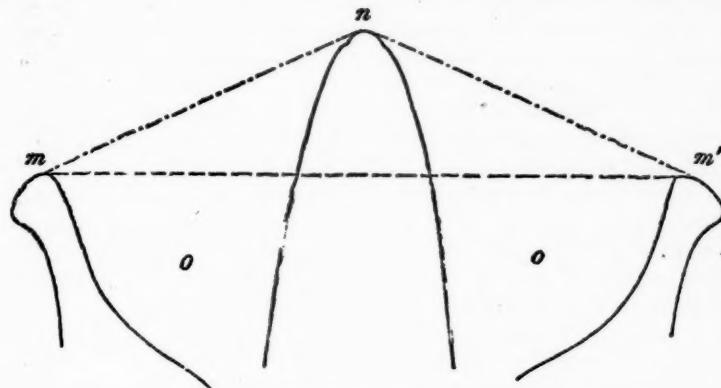
The basis of the index is as follows:—

If a horizontal section of a skull be made in the plane of the nasion, we obtain three points—*n* the nasion (or more often the point described below²), and *m* and *m'*, the most posterior points on the anterior surface of the outer edge of

¹ "Journ. Anthropol. Inst.," vol. ix, p. 117 and vol. x, p. 160.

² The most posterior point on the bridge of the nose, generally from 2 to 4 mm. below the actual nasion.

the orbits, whose relations are somewhat as in this figure, and it is the prominence forward of n in front of the line $m m'$ which



DIAGRAMMATIC HORIZONTAL SECTION OF A SKULL IN THE PLANE OF THE NASION.
 n , nasion. $m m'$, naso-malar line. $m m'$, bi-malar line.

we wish to estimate. By measuring therefore the line $m n m'$, which might be called the *nasо-malar line*, and comparing it to the length of the line $m m'$ (the *bi-malar line*), the latter being taken as 100, we obtain an index which expresses the projection very accurately, and which is easily taken with precision. The exact method used is described below.¹

The following are some examples of this "nasо-malar" index:—

7 Gorillas	103·0 ..	(Range 101·7—103·8)
9 Mongols	105·9 ..	{ " 105·1—106·9)
9 Timor Laut Malays	107·4 ..	{ " 104·4—109·5)
5 Andamanese	107·5 ..	{ " 105·5—108·6)
25 West African Negroes ..	108·5 ..	{ " 106·1—113·3)
35 Torres Straits Islanders ..	108·7 ..	{ " 106·1—112·0)
16 Caucasians	111·1 ..	{ " 109·1—114·2)

¹ First make a pencil dot on the most posterior point on the front surface of the outer edge of each orbit, this point being usually from 2 to 4 mm. below the fronto-malar suture. Then for the first or "nasо-malar" breadth take with a steel tape the distance from one dot to the other over the bridge of the nose, the tape being allowed to pass naturally over the lowest and most posterior point of the central nasal line, without reference to whether it is actually over the nasion itself, or, as occurs in most skulls, over the nasal bones a few millimetres below the nasion. For the second, or "bi-malar breadth," measure with the sliding compasses the distance between the same two points in a direct line, taking great care that the two measurements are from exactly the same points, the actual position of the points being of comparatively small importance. The index is then obtained from the two measurements in the

Naso-malar line \times 100
usual way, the formula being $\frac{\text{Naso-malar line}}{\text{Bi-malar line}}$.

This index can also be easily obtained in the living subject, with a very near approach to accuracy, the bi-malar breadth being taken in the same way as on the skull, while for the nasо-malar line it is only necessary to measure with compasses the distance from either of the outer edges of the orbit to a spot in

From this table, based though it is on rather insufficient materials, may be plainly seen the comparative flatness of face in the pure Mongols, approaching that of the anthropoid apes; the close relation of the African to the Melanesian negroes, and the long interval which separates the Caucasians in this respect from all the lower races.

Individual skulls or races having indices below 107·5, might be called *platyopic* or flat faced; from 107·5 to 110·0, *mesopic*; and above 110·0, *pro-opic*.

With regard to the influence of sex upon the index, one finds, as might have been expected in a low race like the present, that the males have a slightly higher index than the females, owing to the greater thickness of their nasal bones. Of the Torres Straits Islanders the indices are as follows:—

δ (17) 108·9 (106·8 to 111·9)	}	Both sexes (35) 108·7 (106·1 to 112·0).
φ (18) 108·5 (106·1 to 112·0)		

A difference of 0·4 per cent. in favour of the males. In the same way the greater thickness of the nasal bones is possibly the chief cause of the slightly higher index (by 0·2 per cent.) of the Melanesian as compared to the African negroes, the essential relations of the cheek bones to the central line of the face appearing to be about the same in both.

The form of the *palate* is naturally of a remarkably low and simian type, the maxillary index, taken in the manner recommended by Professor Flower,¹ from the relative *external* length and width of the jaw, being only

δ (18) 105·6	}	Both sexes (33) 105·4,
φ (15) 105·1		

which is no less than 6 per cent. below that of the Fijians, 12 below that of the English, and 19 below that of the Esquimaux referred to by Professor Flower. Three skulls (2 δ and 1 φ) have indices below 100, one of them, No. 1, having the extraordinary index of 92·9, no other below 97 having ever yet been recorded. Five skulls (1 δ and 4 φ) have the length and width equal, and in all the palates are, judging by the eye, of a remarkably long and hypsiloid form.

Passing to the highly important character of *gnathism*, or the position of the upper jaw in relation to the cranium, we find that the present race is, so far as is known at present, considerably the most prognathous in the whole world, the *gnathic index*² being

δ (18) 106·5	}	Both sexes (37) 107·1.
φ (19) 107·7		

the centre of the bridge of the nose, and to double the result. Six living English males measured in this way have an average of 114·4, which is just about what one would expect to result were the index taken on their skulls.

¹ "Journ. Anthropol. Inst.", vol. x, p. 161.

² Flower, "Journ. Anthropol. Inst.", vol. ix, p. 119, and vol. x, p. 163.

That these figures represent a most extraordinary degree of prognathism will be seen by examining the list given in Professor Flower's catalogue of the skulls in the College of Surgeons (p. 255) where the highest indices are :—

9 Fijians, 103·2; 11 Tasmanians, 103·3; 58 "other Melanesians," 103·4; 51 Australians, 103·6; and 36 African negroes, 104·4; so that the index of no other race approaches within nearly 3 per cent. of that of these Torres Straits Islanders, while those of the five groups mentioned are all within 1·2 per cent. of each other. The present series being a fairly large and representative one, half males and half females, the two last indices show that prognathism and extreme length of palate are by far the most striking characteristics of these Islanders. No less than 6 individual gnathic indices exceed 110·0, the highest male being No. 9, 112·1, and the highest female No. 38, 113·2. These two indices are only exceeded by that of one male African negro in the large collection of the College of Surgeons (No. 1228—114·8), and are not equalled by any of the Melanesians in the same collection.

Following out for the present race a suggestion made by Professor Flower ("Journ. Anthropol. Inst." vol. x, p. 165), I have placed at the bottom of Table 2 all the measurements, both male and female, reduced to terms of their respective "cranio-facial axes," formed by the basi-nasal line, No. 21 of the tables of measurements. These are so arranged as to be easily comparable with one another and with the terms deduced by Professor Flower from the Fijian and Andamanese skulls described by him. The resulting numbers show in a remarkably clear manner the variations in size and form between the several series, the differences in height, length, proportion of nose and projection of jaw between the Torres Straits Islanders and the other races mentioned being especially noticeable. In fact, all the proportions of the skulls seem to be most fully brought out by this excellent method of investigation, which it is to be hoped will be utilized in future by all authors giving measurements of series of skulls; we shall thus gradually obtain many sets of numbers showing, in the simplest and most satisfactory way, the various cranial proportions of their respective races.

Of individual skulls, one only particularly claims our attention, namely ♂ No. 1, which has already been referred to as presenting exceptionally low characters, and which has therefore been figured in Plates XIV and XV. In most human skulls the different characters are present in varying degrees, their general average characterizing the race, but in this skull all the marks of degradism are present in an exaggerated degree. It is exceedingly dolichocephalic (61·9), flat sided, with a very prominent occipital

region; the forehead is low and receding, the brow ridges are enormously thick and overhanging, almost excelling the largest No. 4, in Broca's scale of glabellæ; the orbits are remarkably broad and low (index 67·5, the lowest in the College of Surgeons catalogue being 71·4 in a Tasmanian), chiefly owing, of course, to the downward development of the brow ridges; the nasal bones are unusually short and little prominent, the nasal aperture is low and broad (index 62·2), and its lower margin is produced into two broad rounded channels, leading forward nearly horizontally towards the alveolar surface. The nasal spine is reduced to Broca's No. 1, which is almost *nil*. The jaw itself is massive, and produced horizontally forward, the gnathic index being 111·1, and that showing the shape of the palate 92·9. The teeth are unfortunately all gone, with the exception of the right first premolar, but their alveoli show what their size and strength must have been. No lower jaw can be found among the series to fit the cranium.

For these various reasons, therefore, this skull may be taken as a type of the lowest and most simian human cranium likely to occur at the present day, and one whose like it may become more and more impossible to obtain in the future owing to the steady admixture of all these lower negroid races with people springing from the higher Caucasian and Mongoloid stocks.

Notes to the tables of measurements and indices.

Measurements Nos. 1 to 7, 9 to 11, 16 to 20, 23 to 26, 28 to 30, 33 and 34 are taken according to Broca's "Instructions Craniologiques," 1875.

" Nos. 8, 12 to 15, 21, 22, 31, 32, 35 to 37, according to Flower ("Journ. Anthropol. Inst." Vol. IX, p. 132; Vol. X, p. 172; Vol. XIV, p. 183, and Cat. Coll. Surg. Vol. I, p. xvii, 1879).

Indices Nos. 1 to 4 and 7. Broca, l.c.

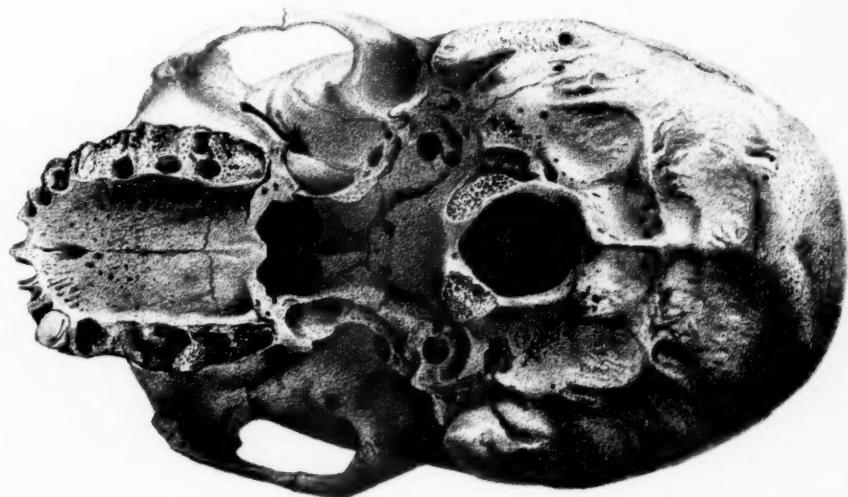
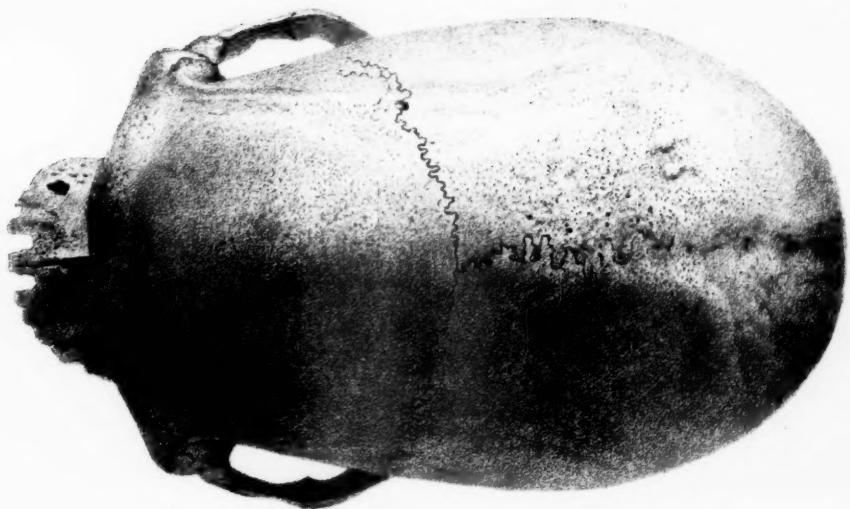
" 5 to 8. See above.

" 6, and 9 to 11. Flower, ll.cc.

The capacity has been taken with shot by Broca's method as revised by Topinard ("Rev. d'Anthrop." 1882, p. 394), using, however, the cylindrical rammer recommended by Dr. Garson, instead of the conical pointed rammer of Broca.

Explanation of Plates XIV and XV.

Skull of Malc Torres Straits Islander, No. 1



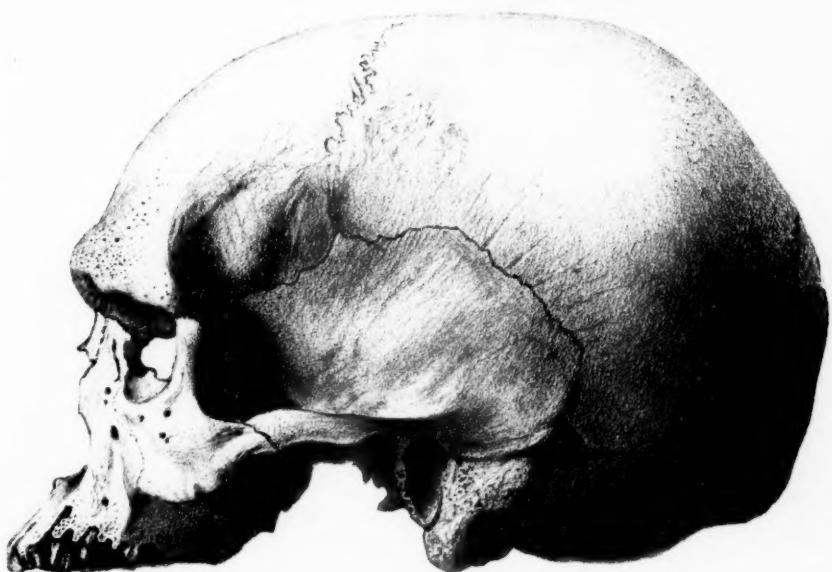
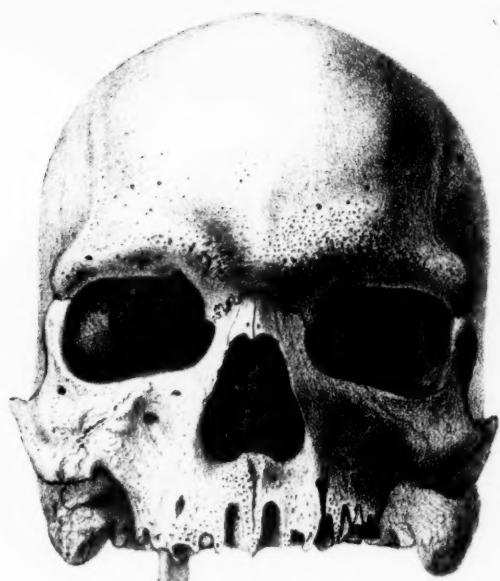
$\frac{1}{2}$ NAT. SIZE.

J. Smit del et lith.

Mintern Bros. imp.

CRANUM OF TORRES STRAITS ISLANDER.
MALE NO. I.

J S

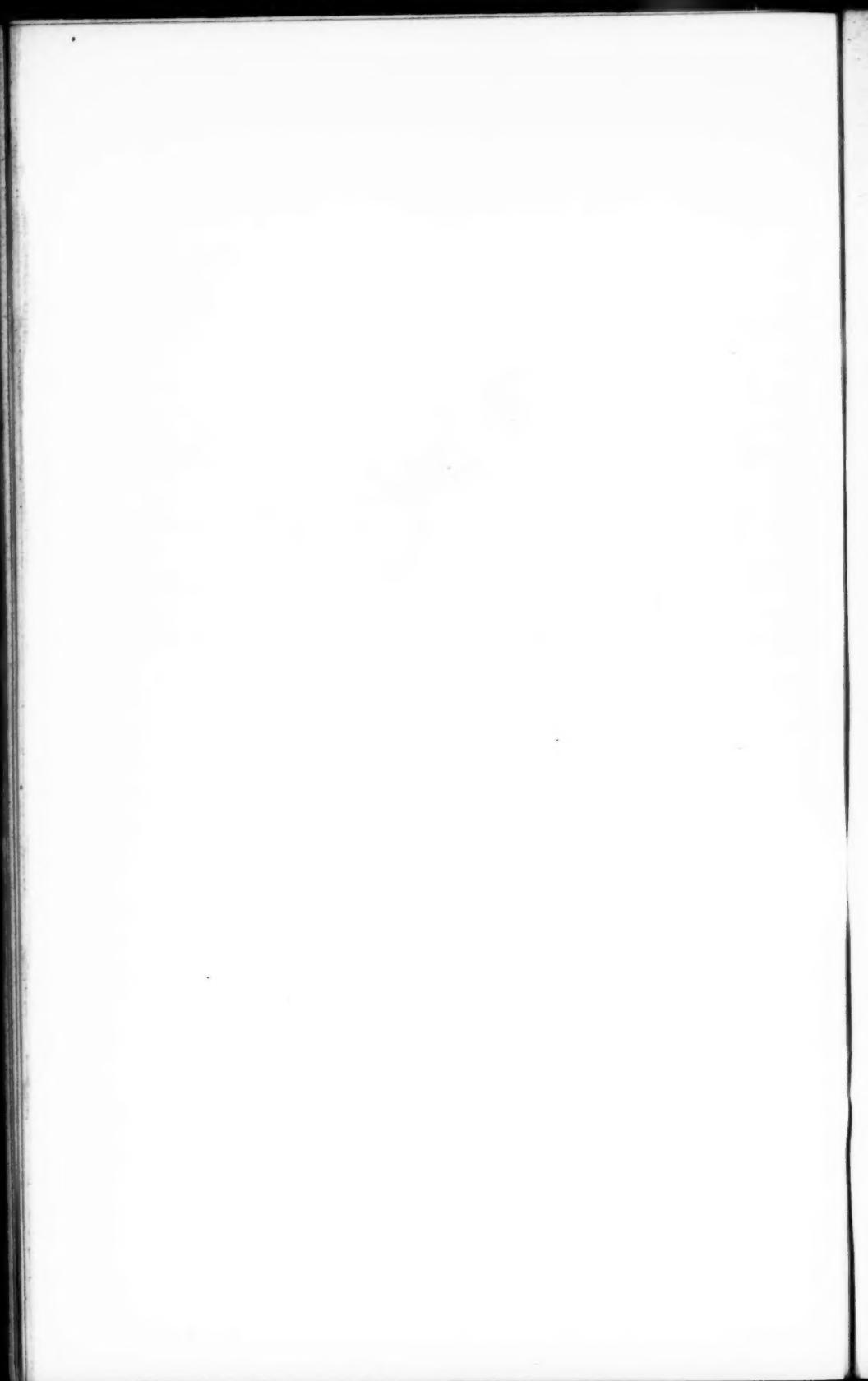


$\frac{1}{2}$ NAT. SIZE.

J. Smut del et lith.

Mintern Bros. imp.

CRANUM OF TORRES STRAITS ISLANDER.
MALE NO. I.



DISCUSSION.

Mr. C. ROBERTS said that an observation which Mr. Thomas had made, to the effect that the female skulls were more distinctly Melanesian and of more uniform type than the male ones, confirmed an opinion which he had long held and endeavoured to develop,¹ namely, that the racial type is more distinctly marked and more persistent in the female than in the male. The speaker was led to form this opinion from noticing that measurements of the living form had a narrower range of variation in women than men. Observations of stature, span of arms, &c., were more closely grouped round the mean, and there were fewer giants and dwarfs among women than among men. In studying the skeleton, anthropologists had been attracted by such conspicuous features as great size, roughness, goring or hollowing of the surface of the bones—characters which were due to physiological conditions of a temporary nature, such as the attachment of muscles employed in various occupations, which were common to many different races, and therefore were exceptional features which ought to be eliminated in our endeavours to arrive at the central or typical form of a race. Not only in the human race but throughout the animal world the female would appear to be the preserver of the type, while the male introduces the variation or modifications of the type with new conditions of life.

Professor THANE and Dr. GARSON also joined in the discussion, and the author replied.

¹ See *Lancet*, 1880. "Nature's Place in the determination of the Sexes, and the hereditary transmission and the acquisition of Physical and Mental qualities."

TABLE I.
MEASUREMENTS, ♂.

* Excluded from cranial averages.

† Excluded from all averages.

TABLE I—*continued.*
MEASUREMENTS, ♂.

Longitudinal arcs.			Foramen magnum.		30. Greatest maxillary breadth.										37. Length of pre-molar and molar series.						
16. Frontal.	17. Parietal.	18. Occipital.	19. Length.	20. Width.	21. Basi-nasal length.	22. Basi-alveolar length.	23. Bi-zygomatic breadth.	24. Bi-jugal breadth.	25. Inter-orbital width.	26. Height of face (ophryo-alveolar).	27. Height of face (nasal-alveolar).	28. Height of malar.	29. Auriculo-orbital length.	Orbit.	Nose.	Palate.	36. Width.				
135	120	141	37	27	108	120	131	118	29	97	71	26	65	92	27	40	45	28	70	65	...
129	132	136	36	27	110	115	138	124	27	103	76	29	75	106	31	42	51	25	66	71	48
126	145	121	42	29	107	110	...	...	26	90	68	26	66	97	31	40	47	24	60	67	...
135	125	119	41	30	103	111	143	124	22	95	70	29	70	105	31	42	51	27	64	66	...
132	137	112	40	32	100	109	131	118	24	96	72	26	71	93	34	40	46	28	64	62	...
128	137	117	39	...	109	115	141	124	28	101	73	28	73	105	33	41	49	27	62	65	...
134	136	117	36	31	107	111	138	128	28	107	76	29	65	110	31	42	52	30	(c) 60	71	...
134	135	123	35	30	100	108	137	...	24	101	74	28	69	...	32	41	48	26	61	68	43·4
129	134	120	37	29	99	111	136	122	25	100	73	30	70	95	32	41	47	25	65	67	...
126	135	118	35	28	99	103	125	113	21	96	70	22	69	92	34	40	49	25	60	68	46
130	125	114	37	29	100	107	129	111	22	97	70	23	70	96	30	39	46	24	60	64	...
128	126	113	37	31	101	109	134	115	24	97	72	23	68	99	34	39	50	24	63	64	...
123	132	150	...	102	106	135	121	24	88	66	27	68	95	31	40	45	25	61	69	...	
123	123	104	39	31	102	106	128	113	23	103	74	25	64	91	36	40	50	25	63	68	44
139	134	117	35	29	104	115	138	120	26	98	72	28	71	109	30	39	49	26	66	69	42·5
126	121	115	38	33	106	114	137	124	25	94	69	22	71	98	34	42	46	25	66	66	...
119	125	112	35	31	103	103	136	120	27	89	65	26	66	98	32	40	45	24	59	65	...
123	115	113	35	30	102	110	141	123	23	98	76	27	67	100	33	41	51	24	64	67	...
134	131	113	37	33	105	113	139	120	22	98	77	27	72	100	36	40	55	22	63	67	47·7
128·8	130·7	118·4	37·3	29·8	103·4	110·2	135·2	119·9	25·0	97·2	71·5	26·2	68·9	97·8	32·0	40·5	48·2	25·7	63·2	66·8	45·4
(18)	(18)	(17)	(17)	(16)	(18)	(18)	(17)	(16)	(18)	(18)	(18)	(18)	(18)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(5)
126·9	128·4	115·7	35·6	28·9	100·5	107·5	129·8	114·6	24·3	93·3	68·8	24·7	67·3	95·3	32·2	39·1	46·6	25·0	61·1	64·4	44·9
(37)	(37)	(36)	(36)	(35)	(37)	(35)	(35)	(35)	(37)	(35)	(35)	(37)	(37)	(36)	(37)	(37)	(37)	(34)	(33)	(7)	

TABLE II.
MEASUREMENTS, ♀.

No.	1. Capacity.	Horizontal circumference.												Transverse arcs			
		2. Length (glabella-occipital).	2a. Length (ophryo-occipital).	3. Breadth.	4. Height.	5. Stephanic breadth.	6. Min. frontal breadth.	7. Bi-auricular breadth.	8. Bi-striangular breadth.	9. Pre-auricular.	10. Total.	11. Transverse vertical circumference.	12. Frontal.	13. Bregmatic.	14. Parietal.	15. Occipital.	
20	1447	191	190	130	127	113	100	109	117	240	524	415	283	289	317	288	
21	1348	189	188	126	131	106	91	105	109	226	505	407	275	285	307	268	
22	1322	188	187	123	128	103	94	109	113	228	505	408	272	278	298	273	
23	1439	185	184	136	131	112	97	110	117	236	515	415	283	298	322	281	
24	1256	185	183	130	128	106	93	104	113	224	502	412	271	286	305	274	
25	1217	184	182	119	130	105	93	97	107	223	490	407	269	283	300	263	
26	1279	184	177	136	128	106	93	106	122	215	498	403	264	279	308	267	
27	1312	183	182	134	132	106	98	110	110	233	497	415	279	290	317	272	
28	1320	183	182	122	138	109	96	105	115	233	498	410	274	280	297	265	
29	1422	182	180	130	134	110	100	108	116	242	502	420	285	294	305	261	
30	1273	181	178	123	135	100	92	100	114	234	489	406	271	281	296	253	
31	1202	180	177	123	129	101	90	100	108	220	484	399	261	281	307	266	
32	1317	177	176	122	132	109	100	107	109	222	485	407	272	284	305	263	
33	1182	174	173	123	129	105	93	100	107	217	477	385	260	270	288	255	
34	1107	172	170	120	126	100	90	106	114	222	469	392	255	261	284	251	
35	1128	171	170	129	128	108	93	100	111	223	478	405	276	288	305	247	
36	984	171	169	116	126	93	83	104	105	211	462	384	252	267	284	251	
37	1185	170	167	129	125	105	96	102	115	225	474	402	272	281	298	247	
38	1162	163	163	123	128	102	91	107	109	204	460	387	251	266	297	246	
Average (♀)		1258·0	179·6	177·8	125·8	129·7	105·2	93·8	104·7	112·2	225·2	490·2	403·2	269·7	280·8	302·1	261·6
(19)		(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	
B.N. (No. 21) reduced to "0		♂ 1375·7	184·3	181·2	125·7	130·9	105·1	95·1	106·0	114·6	233·9	498·4	410·9	276·1	283·5	299·7	264·2
♀ 1287·6		183·7	181·9	128·8	132·8	107·7	96·0	107·2	114·8	230·5	501·7	412·7	276·0	287·2	309·2	267·8	

TABLE II—*continued.*
MEASUREMENTS, ♀.

Longitudinal arcs.			Foramen magnum.		16. Frontal.		17. Parietal.		18. Occipital.		19. Length.		20. Width.		21. Basio-nasal length.		22. Basio-alveolar length.		23. Bi-zygomatic breadth.		24. Bi-jugal breadth.		25. Inter-orbital width.		26. Height of face (ophryo-alveolar).		27. Height of face (nasal-alveolar).		28. Height of malar.		29. Auriculo-orbital length.		30. Greatest maxillary breadth.		31. Height.		32. Width.		33. Height.		34. Width.		35. Length.		36. Width.		37. Length of premolar and molar series.	
134	130	123	38	30	97	108	132	113	26	22	99	104	125	108	111	23	89	24	91	92	91	71	25	26	69	64	91	33	36	48	22	59	63	..	..											
129	133	120	32	27	103	109	125	111	23	23	104	104	129	113	113	23	87	66	67	67	67	71	25	25	69	69	93	33	38	50	24	57	64	..	..											
127	133	118	30	31	103	109	125	111	24	24	119	105	127	111	111	24	89	63	63	63	63	71	25	25	64	64	97	30	36	44	22	61	..	..	..										
128	133	121	34	30	98	104	129	113	23	23	103	109	125	108	108	23	89	66	66	66	66	71	25	25	69	69	93	33	38	50	24	57	64	..	..											
130	126	119	34	29	97	105	127	111	24	24	105	105	123	109	109	23	91	66	66	66	66	71	25	25	66	66	91	32	39	44	25	58	59	..	..											
127	133	111	33	26	98	105	123	109	23	23	105	105	123	109	109	23	91	66	66	66	66	71	25	25	66	66	105	34	39	48	27	..	..	..	..									
135	126	110	38	29	102	... ..	118	25	... ..	22	102	102	102	102	102	21	89	69	69	69	69	71	25	25	66	66	105	34	39	48	27	..	..	..	..									
124	120	125	32	26	103	113	122	108	28	28	103	103	122	108	108	28	89	69	69	69	69	71	25	25	67	67	90	31	39	43	25	62	61	..	..											
124	127	124	35	29	101	130	116	25	25	101	101	130	116	116	25	89	69	69	69	69	71	25	25	21	21	67	96	32	40	45	25												
123	132	106	38	30	103	106	131	116	25	25	103	103	106	131	131	25	93	71	71	71	71	76	25	25	66	66	97	35	41	49	26	57	63	..	..											
128	127	103	35	27	104	108	127	113	26	26	104	108	127	113	113	26	98	71	71	71	71	76	25	25	67	67	99	36	38	50	24	60	64	..	..											
126	134	113	32	27	92	102	120	102	21	21	92	102	102	102	102	21	86	63	63	63	63	74	24	24	62	62	88	30	37	43	24	59	59	..	..											
123	121	123	33	26	93	101	123	109	25	25	93	101	123	109	109	25	89	64	64	64	64	74	22	22	65	65	93	34	37	42	24	58	62	..	..											
119	129	105	34	28	93	96	118	108	24	24	93	96	118	108	108	24	87	65	65	65	65	70	20	20	60	60	86	30	37	46	24	54	57	..	..											
119	111	110	35	28	98	107	120	104	22	22	98	107	120	104	104	22	97	71	71	71	71	76	22	22	66	66	89	33	37	47	24	62	62	45	..													
124	129	99	32	26	94	102	125	110	25	25	94	102	125	110	110	25	75	55	55	55	55	79	19	19	68	68	91	29	37	40	25	..	..	..	..									
123	117	106	32	27	93	102	120	109	21	21	93	102	120	109	109	21	90	65	65	65	65	70	27	27	67	67	92	32	37	46	23	59	61	..	..											
122	110	110	34	29	97	104	128	110	23	23	97	104	128	110	110	23	89	63	63	63	63	72	22	22	64	64	98	35	39	42	26	61	61	..	..											
111	127	106	36	23	91	103	120	105	19	19	91	103	120	105	105	19	83	64	64	64	64	70	20	20	63	63	86	32	37	40	24	57	60	..	..											
125·1	126·2	113·3	34·1	28·1	97·7	104·6	124·7	110·2	23·7	23·7	89·1	89·1	115·9	115·9	115·9	23·7	65·9	23·7	65·7	93·0	93·0	32·4	32·4	37·8	45·1	45·1	24·4	24·4	58·6	61·5	43·5											
(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(17)	(17)	(18)	(19)	(19)	(19)	(19)	(19)	(17)	(17)	(17)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(16)	(15)	(2)								
124·6	126·4	114·5	36·7	28·8	100·0	106·6	130·8	116·0	24·2	24·2	94·4	94·4	119·1	119·1	119·1	25·3	66·6	25·3	66·6	94·6	94·6	30·9	30·9	39·2	46·6	46·6	24·9	24·9	61·1	64·6	64·6	13·9										
128·0	129·2	115·9	34·9	28·8	100·0	107·1	127·6	112·8	24·3	24·3	91·2	91·2	117·5	117·5	117·5	23·7	67·5	23·7	67·5	95·2	95·2	23·3	23·3	38·7	46·2	46·2	25·0	25·0	59·3	62·9	44·5											

TABLE III.

INDICES ♂.

No.	1. Cephalic.	2. Altitudinal.	3. Frontal.	4. Stephanic.	5. Fronto- zygomatic.	6. Orbital.	7. Nasal.	8. Naso-malar.	9. Maxillary.	10. Gnathic.	11. Dental.
1	61·9	64·9	75·2	89·5	80·1	67·5	62·2	109·4	92·9	111·1	...
2	69·5	71	73·4	90·3	81·9	73·8	49	109·2	107·6	104·5	43·6
3	67·5	72·1	75·9	89·4	...	77·5	51·1	109·8	111·7	102·8	...
4	68·7	67·2	72·4	86·6	77·6	73·8	52·9	109·6	103·1	107·8	...
5	67·7	64·6	73·5	89	83·2	85	60·9	107·8	96·9	109	...
6	71·6	74·1	70·3	89	77·3	80·5	55·1	109·3	104·9	105·5	...
7	68·8	72·4	75·8	88·5	81·9	73·8	57·7	111·9	107·6	103·7	...
8	67·2	70·3	78·3	92·7	79·6	78	54·2	...	111·5	108	43·4
9	65·6	70·9	75·8	91·3	75·7	78	53·2	107·6	103·1	112·1	...
10	64·4	70·7	77·7	91·3	82·4	85	51	108·1	113·3	104	46·5
11	67·4	71·1	73·8	90·3	79·8	76·9	52·2	108·2	106·7	107	...
12	74	75·1	71·6	86·5	82·8	87·2	48	106·8	101·6	107·9	...
13	72·1	77·1	75·2	85·8	83·7	77·5	55·6	107·9	113·1	103·9	...
14	70·2	74·2	76	89·6	82·8	90	50	108·7	107·9	103·9	43·1
15*	74·9	77·5	75·7	87·6	87·7	76·9	53·1	108·6	104·6	110·6	40·9
16*	79·7	77·4	70·9	86·9	83·9	81	54·3	111·4	100	107·5	...
17*	80·1	81·9	75·9	90·4	84·6	80	53·3	107·5	110·2	100	...
18*	81·8	80·6	72·7	91·8	78	80·5	47·1	109·7	104·7	107·8	...
19†	81·2	77·3	68·7	84·2	86·3	90	40	106·9	106·3	107·6	45·4
Average ...	68·3	71·1	74·6	89·3	80·7	74·6	53·4	108·9	105·6	106·5	43·5
	(14)	(14)	(14)	(14)	(13)	(18)	(18)	(17)	(18)	(18)	(5)
Average ♂ and ♀ ... }	69·4	71·8	74·6	89·2	82·8	80·2	53·9	108·7	105·4	107·1	43·7
	(33)	(33)	(33)	(33)	(31)	(37)	(37)	(35)	(33)	(35)	(7)

* Excluded from averages of indices Nos. 1 to 5, which are based on cranial measurements.

† Excluded from averages of all indices.

TABLE III—continued.

INDICES ♀.

No.	1. Cephalic.	2. Altitudinal.	3. Frontal.	4. Stephanic.	5. Fronto-zygomatic.	6. Orbital.	7. Nasal.	8. Naso-malar.	9. Maxillary.	10. Gnathic.	11. Dental.	
20	68·1	66·5	76·9	88·5	85·6	91·7	45·8	109·2	106·8	111·3	...	
21	66·7	69·3	72·2	85·8	84·8	91·7	53·3	107·3	100	105·1	42·4	
22	65·4	68·1	76·4	91·3	82·4	81·6	59·1	110·3	110·5	105·8	...	
23	73·5	70·8	71·3	86·6	86·8	86·8	48	106·1	112·3	106·1	...	
24	70·3	69·2	71·5	87·7	82·8	83·3	50	107·3	...	108·2	...	
25	64·7	70·7	78·2	88·6	85·4	82	56·8	108·2	101·7	107·1	...	
26	73·9	69·6	68·4	87·7	...	87·2	56·3	109·8	...	...	...
27	73·2	72·1	73·1	92·4	86·9	79·5	58·1	112	98·4	109·7	...	
28	66·7	75·4	78·7	88·1	83·8	80	55·6	107·7	...	...	...
29	71·4	73·6	76·9	90·9	84	85·4	53·1	108·8	119·3	102·9	...	
30	68	74·6	74·8	92	78·7	92·3	48	110·9	106·7	103·8	...	
31	68·3	71·7	73·1	89·1	84·2	81·1	55·8	109·5	100	110·3	...	
32	68·9	74·6	82	91·7	88·6	89·5	57·1	107·1	106·9	108·6	...	
33	70·7	74·1	75·6	88·6	89	81·1	52·2	106·3	105·6	103·2	...	
34	69·8	73·3	75	90	83·3	89·2	51·1	110·5	100	109·2	45·9	
35	75·4	74·9	72·1	86·1	86·4	78·4	62·5	107·1	...	108·5	...	
36	67·8	73·7	71·6	89·2	77·5	86·5	50	106·3	103·6	109·7	...	
37	75·9	73·5	74·4	91·4	82	89·7	61·9	108·2	100	107·2	...	
38	75·5	78·5	74	89·2	85	86·5	60	...	105·3	113·2	...	
Average	...	70·1	72·3	74·5	89·2	84·3	85·4	54·5	108·5	105·1	107·7	44·1
		(19)	(19)	(19)	(19)	(18)	(19)	(19)	(18)	(15)	(17)	(2)

The following paper was read by the Director :—

Notes on some TRIBES of NEW SOUTH WALES.

By A. L. P. CAMERON, Esq.

§ 1. *Introduction.*

To say that the aboriginal inhabitants of New South Wales, as indeed of the whole of Australia, are rapidly passing away, is to utter what may be called a truism. Almost every writer on the subject has borne testimony to their rapid decadence; and even to the uninquiring and little interested, the fact that they are swiftly and surely treading the path to utter annihilation must be evident. In the vicinity of all large centres of population the natives are now extinct, and in the thinly inhabited, and even the newly-settled parts of Australia, the same causes which have destroyed them near the towns are proving just as fatal, although acting less swiftly. The rapidity with which this extinction of the native race is proceeding may be estimated from the following facts. In 1868 I saw gatherings of from 800 to 1,000 in Western Queensland, about 150 miles north of the New South Wales boundary line, and now I am told, on trustworthy authority, that the whole district could not produce a third of that number.

I note that the late Rev. George Taplin, who had a large experience, and who made good use of his opportunities for studying native character, held the opinion that the best means of saving the race from extinction would be found in their conversion to Christianity. Nevertheless, I can scarcely think that very much can be done in this direction. Missionary labour among Australian races has invariably proved up-hill work. I have known several natives who were educated in the doctrines of Christians, who professed themselves to be Christians, and who were, so far as I could judge, fair examples of christianised blackfellows. On a close examination as to what they really believed, I found that many of the absurd beliefs of their forefathers were still cherished by them. Side by side with the new doctrine that teaches them to forgive their enemies I found the old *lex talionis*, which commanded them to procure the death of an enemy by any means in their power, among which sorcery takes far from a subordinate position.

§ 2. *The Tribes.*

It is somewhat difficult to arrive at the number of tribes in New South Wales, as no single enquirer can well possess sufficient information as to all parts of the colony, to enable him,

even approximately, to define the territory of the different tribes; and where one has to depend upon information collected by friendly correspondents in different parts of a large colony, who have not previously given much attention to the subject, mistakes are likely to occur as to whether the information refers to a tribe or to a clan of a tribe. It may be well here to give a definition of what I mean by "tribe." When the word is used in this paper it refers to a whole community of people, whose language, laws, institutions, ceremonies, and customs are the same, and who call themselves by a certain name. The word "nation" will be applied to a group of kindred tribes, who are on friendly terms, and whose language and laws are somewhat but not altogether similar. The word "clan" will be used in reference to subdivisions of a tribe having the same language, laws, &c.

I think it probable that there were not more than five or six nations in New South Wales, each nation consisting of from five to twenty tribes, and in some parts of the colony these tribes were again subdivided into clans.

These numbers are merely an approximate supposition, and I do not pretend to anything approaching strict accuracy, as it would require years of labour and constant travelling over the colony to determine with any degree of certainty the number of tribes in New South Wales, and the boundaries of their respective territories.

Although I do not in these notes deal with the Kamilaroi tribes, yet it is necessary that I should, in connection with my subject, briefly refer to them by saying that they constituted a nation which was foremost in strength and importance among those of New South Wales. Many other tribes, which do not speak the Kamilaroi language, although they understand it more or less, use the same words to denote their class-divisions, and in the organisation of their society strongly resemble that of the Kamilaroi-speaking people.

I now proceed to enumerate the *nations* and *tribes*.

(1.) *The Wiradjeri.*¹—This was a powerful nation, and may have been one of the largest in New South Wales. Its country extended from Mudgee to Hay, and for a long distance down the course of the Lachlan River.

(2.) It seems to me probable that the Wonghi or Wonghibon tribe, concerning which I shall give some information in these notes, was in fact a branch of the Wiradjeri nation. In speaking of a Wonghi black to one of the Wathi-wathi tribe, who had

¹ I have heard it pronounced Wiradjeri and Wiraduri in different places. I have no doubt it is the Wiradhuri mentioned by Ridley ("Kamilaroi," p. 119) as inhabiting the Wellington district.

referred to him as a Wiradjeri—I said, “He is not Wiradjeri, he is Wonghi,” and my friend replied, “It is all the same, only they talk a little different; Wiradjeri blackfellows say ‘Wira’ for No! and Wonghi black fellows say ‘Wonghi,’ but they are all friends.” This Wonghi tribe occupied a tract of country lying along the Lachlan River from Whealbah about eighty miles upstream, and back from the river for a distance of about one hundred miles.

(3.) Adjoining the Wiradjeri I find another considerable nation, for which I have not as yet succeeded in finding any common distinguishing name. It consists of the following tribes, in the order in which they follow each other down the Murrumbidgee and Murray Rivers: Ithi-ithi, Wathi-wathi, Muthi-muthi, Ta-ta-thi, and Keramin. These tribes speak different languages, but a man of any one of them usually speaks two or three, and understands more.

(4.) The last described group of tribes extends down the Murray River almost to the Darling River junction at Wentworth. At this place commences the country of another very large nation, the name of which is *Barkinji*, extending along the course of the Darling as far up at least as Menindie, and east and west of the river for perhaps a mean breadth of eighty miles.

This *Barkinji* nation is composed of the following tribes, some of which may be perhaps sub-tribes or even clans: Kairongo, Pūlali, Lamon, Wa-imbo, Mothingo, Murkurilla, and Karndilke, I am not able to fix their respective localities in the *Barkinji* country.

(5.) Between the *Barkinji*, the *Wiradjeri*, and these tribes along the Murrumbidgee and Murray, of which the *Ta-ta-thi* is one, I find another large tribe, or perhaps nation, called *Berri-ait*, of which at present I know little beyond this, that it is composed of the following subdivisions: Lagerung, Murro, Milparo, Boanjilla, Pūlarli,¹ Nielyi-gulli, Kurlki-gulli, and Karndukūl.²

¹ There is much difference in the pronunciation of the Pūlali of the *Barkinji* and the Pūlarli of the *Beri-ait*. In the latter the “u” is short and the “r” well sounded.

² The vocabulary given at p. 366 shows a great resemblance between the languages of the *Barkinji* and *Beri-ait*. I suggested to my informants that they were parts of the same tribe, but they would not hear of it. I suggested that before the whites came the *Beri-ait* blacks must have been forced to go into the rivers in summer time. They said that now and then they did so, but went in a sufficiently strong party to fight any section of the river tribes they might meet, and that when they had no water they lived on what they obtained from the roots of the Mallee and of a species of *Hakia*. I was told that a proof of their being totally distinct was that any old *Barkinji* black could swim, but that no *Beri-ait* could.

To some it may seem strange that any tribe could live in the almost waterless region between the Lachlan and Darling Rivers, where the territory of the

Some, but not all of the above tribes, are named from the negative in their language, for instance the Wiradjeri from *Wira*, the Wonghibon from *Wonghi*; others are named after the name of the language but not after the negative, as in the whole of the third group, for instance, Ta-ta-thi. But some tribes have two names, for instance the Ta-ta-thi is also called Nimp-mam-wern, that is to say, the "Light-lip." The Wathi-wathi tribe is also called Narinari.¹

There seems to have been some bond uniting the Tatathi group of tribes with the Barkinji and the Wiradjeri.

As far as I can make out there are no very clearly defined boundaries between these tribes or their greater aggregates, the nations. The tribes seem to melt into each other. For instance, A, B, and C being tribes, B is on intimate terms with both A and C, understanding and talking the language of each. But A rarely holds intercourse with C, merely understanding some of the language, but not speaking it.

To the south of the Murray River, and of the tribes which I have enumerated, there was in the Colony of Victoria a large nation, whose males were called Kulin, but with which I have no further concern in these notes.

§ 3. *The Class-divisions.*

Every tribe with which I am acquainted in New South Wales is divided into two exogamous intermarrying classes, and in many tribes the division is into four such classes.

All Kamilaroi-speaking people are divided into *Ipai*, *Kumbu*, *Murri*, and *Kubbi*; the female equivalents being *Ipatha*, *Butha*, *Matha*, and *Kubbitha*. These class names are also used by tribes which are wholly unacquainted with the Kamilaroi

Beri-ait is located. Considerable quantities of water may, however, be obtained from the roots of trees, notably from those of the Mallee and of a species of Hakia, locally known as the "needle bush."

The means adopted for obtaining water from these trees is as follows:—The lateral roots, say of a Mallee, are dug up in lengths of from eight to ten feet, stripped of their bark, cut up in lengths of say a foot or eighteen inches, and placed upright in a vessel with thicker end downwards and allowed to drain. The roots selected are from one to three inches in diameter, and are readily dug up, as in many localities they extend laterally for ten feet without varying much in thickness, and do not go more than nine or ten inches into the ground. The facility with which these roots may be obtained depends of course a good deal upon the nature of the ground, and in some patches of Mallee it is very difficult to obtain them. A good root, say ten feet long and two inches and a half thick, would yield a quart of water, which, though not very palatable to those unaccustomed to it, is liked very well by those who have used it for a time.

¹ My Wathi-wathi informant was much surprised to learn of another Narinari, or Narinyeri tribe on the lakes into which the Murray River flows. He could not understand how it was that he had never heard of it. I could not learn from him that the word Narinari had any meaning in his language.

language, but among whom the organisation of society is the same as in the Kamaroi tribes.

There are good reasons for believing that where we meet with four classes they have been formed by the subdivision of two primary classes.¹ Each tribe has a further subdivision into totems or animal names, which are borne by every member of the tribe.

The following are the tabulated class systems referred to, so far as I have been able to determine them:—

Wonghibon Tribe.

Four classes.	Totems. ²
Ipai.. ..	W ^a gun (Crow).
Kumbu ..	Murua (Kangaroo).
Murri ..	Tali (Iguana).
Kubbi ..	Kuru (Bandicoot). Kurakai (Opossum).

¹ I have followed the method of tabulating the class divisions used by Mr. Howitt. See Notes on the "Australian Class Systems," "Journ. of the Anthrop Inst." May, 1883.

² Unfortunately I cannot assign the Wonghi totems to their respective classes. I regret also that I am unable to give the list of Barkinji totems, but I remember that they are almost the same as those of the Ta-ta-thi, i.e., Kulthi = Emu, and Kultuba = Whistling Duck for Mukwara, and Karni = Lizard, and Turltha = Kangaroo for Kilpara. There are also other totems.

I am indebted to Mr. J. D. Scott for the classes and totems of the Barinji tribe of the Paroo River, which I subjoin.

Barinji Tribe.

Two classes.	Totems.
Mukwara ..	Biliari (Eaglehawk). Turlta (Kangaroo). Kurte (Bilbae, a rabbit-like burrowing animal). Tickara (Turkey). Kultappa (Whistling Duck). Burkunia (Bandicoot).
Kilpara ..	Kulthi (Emu). Turru (Snake). Kami (Lizard). Muringya (Wallaby). Bu-una (Iguana). Kuntara (Native Companion).

Barknji Tribe.

Two classes.	Totems.
Mukwara.	..
Kilpara.	..

Ta-ta-thi Tribe.

Two classes.	Totems.
Mukwara ..	Waip-illi ¹ (Light Brown Eaglehawk). Parna-iri (Teal Duck). Wirak-gintha (Jew Lizard).
Kilpara ..	Wala-kili (Crow). Wai-im-bali (Iguana). Wa-ip-illi (Brown Coloured Eaglehawk).

The Keramin people are separated by a distance of 400 miles, or nearly, from the Barinji, yet we find that they have some totems in common; the Mukwara in both tribes having Kangaroo and Bandicoot, and the Kilpara having Emu and Snake.

Keramin Tribe.

Two classes.	Totems.
Mukwara ..	Mundhill (Dark Coloured Eaglehawk). Birak (Red Kangaroo). Tiri-in (Teal Duck). Wiri Kuruk (Spoon-bill). Lant Wong (Bandicoot). Mungo-ine (Lizard).
Kilpara ..	Maneru (Silverfish). Runganyi (Emu). Wak (Crow). Turath (Padymelon). Dhoke (Whipsnake).

Of the Beri-ait class system I only know that it divides into Mukwara and Kilpara.

¹ The words Waip-illi and Wa-ip-illi are pronounced differently, and the two birds are different.

In the Ta-ta-thi group of tribes, besides the regular totems, the Bat is very much revered by the men, and is never killed by them, while should a woman kill one, there is a great row, in which the women sometimes get hurt. A small owl is likewise reverenced by the women, who attack the men if they try to kill one. By the Ta-ta-thi the Bat is called *Rakur*, and the small owl *Dhrail*; the Wathi-wathi call them *Benalongi* and *Yeraliri* respectively.¹

In this group of tribes a man never kills his totem, but he does not object to eat it when killed by another.

Everything in the universe is divided among the different members of the tribe; some claim the trees, others the plains, others the sky, stars, wind, rain, and so forth.

§ 4. Marriage and Descent.

The following table shows the marriages and descents in one of the tribes referred to. In all of them descent is counted in the female line:—

Wonghibon Tribe.

Male.	Marries.	Children are
Ipai	Matha	Kubbi and Kubbitha.
Kumbu	Kubbitha	Murri and Matha.
Murri	Ipatha	Kumbu and Butha.
Kubbi	Butha	Ipai and Ipatha.

I was much surprised to find that the marriage arrangements between these classes are so different from those of the Kamarilloi, and I suspected some mistake. I made every effort to discover the truth, and found that the above statement is correct. The Wonghi intermarry with the Wiradjeri, among whom I knew that the rule is that (for instance) Ipai marries Kubbitha, and I

¹ I note that Messrs. Howitt and Fison, in a paper "From Mother-right to Father-right" ("Journ. of the Anthropol. Inst.", August, 1882), give the Bat and the Nightjar as totemic subdivisions of the Mukjarawaint tribe, and the Emu-wren and Superb Warbler as totemic divisions of the Kurnai tribe. As seen by the light of the tribes which I now describe, I regard the Bat and Small Owl, Bat and Nightjar, Emu-wren and Superb Warbler, not as totems in the same way that other animal names are. The daughters of a Kilpara woman whose totem is Lizard (Ta-ta-thi tribe) is Lizard like herself; the daughter of a Mukwara woman whose totem is Emu, is Emu like herself, but both of them reverence the Little Owl. Another reason that makes it evident to me that the Bat and Little Owl are something different from ordinary totems is, that a man, though he will not kill his own totem, has no objection to anyone else killing it, and will then eat it, but no man of these tribes will kill a bat, nor let a woman kill it, to whom the bat is not sacred. I have heard men and women speak to each other as "Rakur" (bat) and "Dhrail" (little owl).

have endeavoured to find out whether a Wonghi Ipai would marry a Wiradjeri Matha according to his own class laws, or a Wiradjeri Kubbitha according to hers. I am not yet certain as to this rule. My Wathi-wathi informant told me that though he did not know much about the Wonghi, he could understand that the difficulty could be got over readily by the totemic names of the individuals, and from what he said I could gather also that it would have been a very different matter had it been asserted that Ipai could marry Butha or Ipatha instead of Matha.

I have learned from Barkinji, Ta-ta-thi, and Keramin blacks that Mukwara is the equivalent of Murri-Kubbi, and Kilpara of Ipai-Kumbu; and they also assert that any totem of Mukwara may marry any totem of Kilpara. This seems strange, for a Keramin Kilpara of Emu or Padymelon totem is Kumbu, and Kilpara Silverfish, Crow and Whipsnake is Ipai, and so on with the others.¹

The class divisions are always strictly exogamous (Mukwara marrying Kilpara, and Kilpara marrying Mukwara), yet this general rule is restricted by nearness of blood, so that, apart from the class regulations, there are special laws prohibiting consanguineous marriages.

The strictness with which the class laws are always carried out is surprising. Even at the present day, when the decrease of their numbers has made it very difficult to obey all their ancient customs, any infringement of the marriage law, if persisted in, is punished by death. I know of an instance of such infringement having recently occurred in the Wonghi tribe. A man took a woman of a forbidden class as his wife, and carried her off to the country of a neighbouring tribe, with which he was on friendly terms. This case is not yet settled, but I was told by some of the natives that the Wonghi men of the delinquent's class name were on his track, and that his death is certain, unless he at once leaves the woman, and even then he will have to submit to severe punishment in expiation of his offence.

Even in casual amours, which are not of infrequent occurrence, the class laws are invariably observed.

Instances might be found in each of the tribes I am concerned with, but one from the Ta-ta-thi will perhaps suffice to show the general resemblance of custom. In this tribe there is at times a good deal of promiscuous intercourse between the sexes, but this is always within the class limits, any infringement of

¹ I take this opportunity of correcting the information which I gave to Mr. Howitt as to the equivalents of Mukwara and Kilpara (quoted in "Notes on the Australian Class Systems," p. 10).

which always brings down upon the offenders the swift wrath of the tribe. My Ta-ta-thi informants tell me that members of this tribe were rarely ever known to break the law, but that if a man and a woman of forbidden classes did marry, the man would be put to death and the woman be beaten or speared, or both, till she was nearly dead; the reason given for not meting out to her the same punishment as to the man being that she was in a manner probably coerced.

In all the tribes to which I refer in these notes, a few men had two wives, but the greater number had only one. They married within their own tribe, always paying due regard to the class laws, and also intermarried with the other surrounding tribes. Little or no ceremony attends the actual marriage.

Girls are very frequently promised when children, and when marriageable are taken to the future husband's camp by the mother,¹ or mother's brother; the mother giving her daughter a bag to carry things in, and a yam-stick. The father has nothing to do with the disposal of his daughter. The reason given is that the daughter belongs to the class of her mother's brother, not to that of her father. Notwithstanding this they believe that the daughter emanates from her father solely, being only nurtured by her mother.

The woman is bound to be faithful to her husband, the penalty being whatever punishment he thinks fit to administer. But the rule does not apply to the man.

It is not permitted that a girl should have intercourse with any young man until this has taken place with some old man, or old men of that class with which her class intermarries. I am not certain as to the influence of the totem in this case.

In the tribes which are organised into two classes, for instance, the Barkinji, every Mukwara man speaks of each Kilpara woman as "wife," while every Kilpara woman speaks of each Mukwara man as "husband." Similarly in the tribes organised into four classes, the Ipai men speak of the Kubbitha woman as their "wives," and are spoken of by the latter as "husbands;" and so on with the rest of the classes.²

A female captive belonged to her captor if of a class from

¹ There is, however, a certain amount of restriction in the intercourse of a man and his promised wife's mother, but it is not so pronounced as after his marriage. I remember that in Queensland I observed a case in point. The man was often about the camp of his destined father-in-law, when I remarked that he never spoke to his promised wife's mother, though she joined in a general conversation when he was present, and he did not appear to shun her as much as he did after he married her daughter.

² It must be borne in mind that the Wonghi are an exception to the usual rule, in so far that Ipai marries Martha.

which he might take a wife. No man was permitted to retain one of a forbidden class name. In many instances such women were common for a time to all the members of the tribe, but subject to the class laws, and were afterwards allotted to those who might lawfully marry them.¹

It is a rule of almost universal extent in New South Wales, that visitors to a neighbouring tribe having the same class organisation are accommodated with temporary wives.

A custom, which seems to indicate a time when marriage was in the group, is that of exchanging wives, either at some grand assembly of the tribe, or in order to avert some threatened calamity. This custom is, I think, rare at present. It is also an occasional custom, that two tribal brothers having quarrelled, and wishing for a reconciliation, the one sends his wife to the other's camp, and a temporary change is effected.

These facts seem to me to show, when taken in consideration with other tribal customs, that in New South Wales there was a time in the past when group marriage was in force, for even now one class is theoretically husband or wife to another class.

I may notice here the curious system of mutual avoidance that exists between mother-in-law and son-in-law.

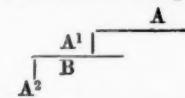
It is of universal occurrence so far as I know throughout the whole of Australia, certainly in every tribe of aborigines I have ever come in contact with in New South Wales and Queensland.

A man never speaks to his wife's mother if he can possibly avoid it, and she is equally careful in shunning all communication with him.²

¹ Mr. J. D. Scott tells me of the Barungi tribe that when a man dies his widow mourns for a fortnight, after which she becomes common to all the men of her deceased husband's class, until another husband is allotted to her.

² Mr. Fison, in "Kamilaroi and Kurnai," and Mr. Howitt, in his "Notes on the Australian Class Systems" ("Journ. of the Anthropol. Inst.", May, 1883), assign as a reason for this prohibition that "under the division of a tribe into classes the mother-in-law and her daughter are both of a group with which his group intermarries, and that in order to prevent connections which are regarded with abhorrence by the aborigines, and which the class laws were unable to prevent, the prohibition of any intercourse whatever between a man and his wife's mother arose as a reformatory movement. This reason does not seem to me sufficient.

The subjoined diagram of three generations of the class A in the female line shows that B can marry A¹ his wife, or A² her mother, or A² his daughter, so far as there is not anything inherent in the class laws to prevent it.



But while there are other social laws to prevent his marrying either daughter or mother-in-law, there is no social edict against a man holding ordinary com-

§ 5. The Relationships.

The terms which I have tabulated show the relationships of the Wathi-wathi tribe. They are as real to them as are our own to us, and any man who married a woman who was, according to this system, his sister, that is to say, the daughter of his father's brother, or of his mother's sister, would be deemed guilty of incest, and would incur the penalty of death. The same system of relationships is found in all the tribes I deal with in these notes, and in them all a man regards his mother's sister's child, or his father's brother's child in precisely the same light as he regards his mother's child or his father's child.

English.	Wathi-wathi Tribe.
Elder brother	Wawi.
Younger brother	Mamui.
Elder sister	Tatui.
Younger sister	Minukui.
M. Father's brother's son	†Wawi or Mamui.
F. Father's brother's son	†Wawi or Mamui.
M. Father's brother's daughter	†Tatui or Minukui.
F. Father's brother's daughter	†Tatui or Minukui.
M. Mother's sister's son	†Wawi or Mamui.
F. Mother's sister's son	†Wawi or Mamui.
M. Mother's sister's daughter	†Tatui or Minukui.
F. Mother's sister's daughter	†Tatui or Minukui.
M. Father's sister's son	Neripui.
F. Father's sister's son	Malūnui.
M. Father's sister's daughter	Malūnui.
F. Father's sister's daughter	Indapui.
M. Mother's brother's son	Neripui.
F. Mother's brother's son	Malunui.
M. Mother's brother's daughter	Malunui.
F. Mother's brother's daughter	Indapui.
Father	Mamui.
Father's brother	Mamui.
Mother's sister's husband	Mamui.
Father's sister's husband	Kukui.

* M signifies male speaking.

F " female "

† According as the person spoken of is younger or older than the speaker.

munication and intercourse with his own daughter, although there is with respect to his mother-in-law.

Again, when the tribe is divided into four classes, the mother-in-law is not of the same class as the wife, and therefore the argument could not apply. Of course it might be urged that the custom came into existence at a time when the tribe had only the two primary classes, but we generally find that when the necessity for a rule ceases to exist, the rule itself falls into disuse, and it would be necessary to show that in tribes having four classes the rule was not so stringent as in those having only two.

	English.		Wathi-wathi Tribe.
Mother		Kukui.
Mother's brother		Gūnui.
Mother's sister		Gūnui.
Father's brother's wife		Gānui.
Mother's brother's wife		Ni-inqui.
Father's sister		Ni-ingui.
M. Son		Wa-ipui.
M. Brother's son		Wa-ipui.
M. Wife's sister's son		Wa-ipui.
M. Wife's brother's son		In-gipui.
M. Sister's son		In-gipui.
F. Son		Wa-ipui.
F. Sister's son		Wa-ipui.
F. Husband's brother's son		Wa-ipui.
F. Husband's sister's son		Natowui.
F. Brother's son		Natowui.
Father's father		Matui.
Father's father's brother		Matui.
Father's father's sister		Matui.
Father's mother		Mi-imui.
Father's mother's sister		Mi-imui.
Father's mother's brother		Mi-imui.
Mother's father		Naponui.
Mother's father's brother		Naponui.
Mother's father's sister		Naponui.
Mother's mother		Kokonui.
Mother's mother's sister		Kokonui.
Mother's mother's brother		Kokonui.
M. Son's son		Matui.
M. Brother's son's son		Matui.
F. Brother's son's son		Matui.
F. Son's son		Mi-im-ui.
F. Sister's son's son		Mi-im-ui.
M. Sister's son's son		Mi-im-ui.
M. Daughter's son		Naponui.
M. Brother's daughter's son		Naponui.
F. Brother's daughter's son		Naponui.
F. Daughter's son		Kokonui.
F. Sister's daughter's son		Kokonui.
M. Sister's daughter's son		Kokonui.
Husband		Nopui.
F. Husband's brother		Nopui.
Sister's husband		Nopui.
Husband's sister's husband		*Wawi or Miamui.
Wife		Nopui.
Wife's sister		Nopui.
M. Brother's wife		Nopui.
Wife's brother's wife		*Tatui or Minukui.
Wife's brother		Pingaipui.
Husband's sister		Indaipui.
M. Sister's husband		Pingaipui.
F. Brother's wife		Indapui.
M. Son's wife		Bo-ika-thui.

* According as the person spoken of is younger or older than the speaker.
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English.			Wathi-wathi Tribe.
M.	Daughter's husband	..	N'gutha N'guthui.
F.	Son's wife	Bo-ika-thui.
F.	Daughter's husband	..	Natundui.
F.	Husband's father ..	..	Bo-ika-thui.
M.	Wife's father ..	..	N'gutha N'guthui.
F.	Husband's mother..	..	Bo-ika-thui.
M.	Wife's mother ..	..	Natundui.

The following are the tabulated class systems of the tribes herein referred to, so far as I have been able to determine them:—

Wonghibon Tribe.

Class Division.	Totems.
Ipai ..	Wagtin (Crow).
Kumbu ..	Muruia (Kangaroo).
Kubbi ..	Tali (Iguana).
Murri ..	Kuru (Bandicoot). Kurakai (Opossum).

§ 6. Tribal Government.

In these tribes the office of headman was in a sense hereditary, that is to say, the son would inherit the position of his father if he possessed any oratorical or other eminent ability; but if not, then the son of the deceased's brother would hold the position, or, failing him, then the nearest relation having the same class name.

The Wathi-wathi will serve me for an illustration. If the son of a deceased headman was, for some sufficient reason, not deemed worthy of the office, an assembly of the whole tribe selected some one else, and the successor ought to be a brother of the deceased, or one of the nearest relations. This principle of succession by the brother, or by the nearest relation of the same totem, rather than by the son, is closely connected with uterine descent, which obtains in all these tribes. It comes out clearly in cases of death where property is left. Most of it is buried with the deceased, but the dogs, and perhaps some valuable tomahawk, would be given to the dead man's brother.

Sometimes, when an expedition was agreed upon, a leader was appointed by the majority of the party going upon it, but I believe that while the men forming the party chose their own leader among themselves, the party as a whole was selected by the old men of the tribe.

In quarrels between individuals, which also sometimes spread even to the whole classes, it is class mate who helps class mate; but there is a curious exception in the Wonghi tribe, that Murri helps Ipai, and *vice versa*, while Kumbu helps Kubbi, and Kubbi Kumbu, for the reason, as it has been explained to me, that Ipai is the father of Murri, and Kumbu of Kubbi, and so on.

§ 7. *The Bora Ceremonies.*

By far the most important among the ceremonies practised by the aborigines of New South Wales is the Bora,¹ at which youths are initiated to manhood, and among almost all tribes of New South Wales, and many of those of the other colonies, the knocking out of one of the front teeth, and sometimes two, from the upper jaw, is the visible sign that the initiation has taken place.²

The ceremony is, I think, much the same in all parts of the colony. There are a few variations in the mode of assembling the tribe, and in the actual initiation, but there is, so far as I know, no very essential difference, judging by the descriptions I have had from members of different tribes.

In the Wonghi tribe the youths on approaching manhood attend a meeting of the tribe. The ceremonies of initiation are secret, and at them none but the men of the tribe who have been initiated attend with the novices. At the spot where the ceremonies are to be performed, a large oval space is cleared. The old men of the tribe conduct the ceremonies, and the "medicine man" of the tribe is the master of them. Part of the proceedings consists in knocking out a tooth and giving a new designation to the novice, indicating the change from youth to manhood. When the tooth is knocked out, a loud humming noise is heard, which is made with an instrument of the following description: a flat piece of wood is made with serrated edges, and having a hole at one end, to which a string is attached, and this swung round produces a humming noise. The uninitiated are not even allowed to see this instrument. Women are forbidden to be present at these ceremonies, and should one, by accident or otherwise, witness them, the penalty is death. The penalty for revealing the secrets is probably the same.

¹ "Bora" is a Kamilaroi word, and has now become well known to white men as a term signifying these ceremonies, and it may be well to adopt it for this purpose. In the tribes I describe it is called Boorpung, and by the Barungi Barali.

² The initiation is a sacred rite, and I know of only one instance beside that of Mr. Howitt of a white man having been present.

When everything is prepared the women and children are covered with boughs, and the men retire, with the young fellows who are to be initiated, to a little distance. It is said that the youths are sent away a short distance one by one, and that they are each met in turn by a Being, who, so far as I can understand, is believed to be something between a blackfellow and a spirit. This Being, called Thuremlin, it is said, takes the youth to a distance, kills him, and in some instances cuts him up, after which he restores him to life and knocks out a tooth. Their belief in the power of Thuremlin is undoubted.

The following is a description of a Bora among the Wathi-wathi.¹ It was furnished me by Makogo, a very intelligent member of that tribe, and was verified by the statements of others.

When it happens that a sufficient number of youths are old enough for initiation, the chief or headman sends messengers to the various sections of the tribe, informing them that a Bora (or Boorpung as they call it) is to be held at an appointed place. To each of the messengers of the Bora is given an instrument called "Poopanderi," which is made of the fur of opossums twisted into yarn, plaited into a circular form, and fixed on a piece of thin flat wood. When the messenger arrives he shows the poopanderi to the men and announces his mission; he is, however, very careful not to allow it to be seen by women, children, or uninitiated youths. The following day the party depart, and on arriving near the place of meeting advance towards the camp in a sinuous manner, and with many pantomimic gestures. All the men are painted, and many have their heads adorned with feathers.

When the whole of the tribe is assembled at the Bora ground the messengers produce the poopanderi and place it in the forehead band. On seeing this, many of the youths, knowing what it is the signal of, attempt to escape, but are immediately seized by their Waingapuis, that is to say, the men who have charge of them during initiation.² Each youth is invested with a belt made from the twisted fur of opossums, and a fringe made from strips of skin of the same animal hangs down in front. After the adjustment of this belt no further attempt to escape is made, and the youths resign themselves to the inevitable. The night previous to the ceremony is devoted to a "Korroboree," and various kinds of amusements. One will simulate the actions of an emu which some of the others pretend to hunt; another will

¹ The Wathi-wathi ceremonies are attended by the Barkinji, Ta-ta-thi, and more rarely by the Muthi-muthi.

² The term Waingapui is reciprocally applied by the youths and their guardians.

endeavour to imitate a dingo, and all appear to thoroughly enjoy the rude dramatic attempt, and keep up the festivities to a very late hour.

During some of the day following, the women and children are made to lie down, and are covered with boughs, while at the same time each of the youths is seized by his Waingapui and hurried off to the scene of initiation, which is generally in a scrubby place, two or three hundred yards from the camp. Here they are all laid on the ground in a row, and covered with opossum skins, and are left in that position for an hour or so, while the men discuss matters connected with the coming ordeal.

They are then raised up, but the rugs are kept over their heads; in this position they are kept for another hour, and sometimes for much longer. Should they require anything the Waingapui of each attends to his wants. Two holes, each about a foot or fifteen inches deep, are made, and into these holes the feet of the youth are inserted, and the holes filled up. This is done to keep him steady and prevent struggling. The Waingapui stands behind the youth, and a man who is accustomed to the office advances with a mallet and a small wooden wedge, which is driven between the teeth for the purpose of loosening them. The tooth is then knocked out and kept for some time by the Waingapui.

During this operation one of the tribe, who is concealed in the scrub at some distance, whirls the humming instrument round his head. This instrument is supposed to have a wonderful magic influence. By the Wathi-wathi it is called Kalari.¹ After the Bora it is generally given into the keeping of some unmarried man, who either carries it about him, or secretes it in some safe place.

After the knocking out of the tooth is completed, the youths are brought back to the camp and shown to the women, who pretend to feel deep sorrow for them, but who are in reality very proud of having their sons or brothers initiated to manhood, as it gives them a status in the tribe which they did not before possess. The youths are then taken by the Waingapus into the bush, where for two or three months they must remain excluded from women. During this period their Waingapus live with them, and their return to camp is gradual. Thus the young men will at first return to the camp at night, and each time of returning will prolong their stay. At the initiation the names by which they are known are changed. Boys are called *Ngwi-mkowi* before they attend the Bora; from their initiation

¹ The Ta-ta-thi call it Kalk, that is to say, word.

till their return to the tribe they are *Bo-it-api*; after their return they become *Bin-api*.¹

Everything connected with the Bora is considered sacred, and there is no doubt that any woman found prying into its mysteries would be severely punished, probably killed. It is said that should a Waingapui even touch a woman in any way while the Bora is going on, she would become seriously ill.

Initiation confers many privileges on the youths, as they are now allowed to eat many articles of food which were previously forbidden to them. They may also leave the camp of their parents and join that of the young men, and are permitted to take a wife.²

§ 8. *Doctors and Sorcery.*

Sorcery is a powerful element in the life of the Australian savage, and although belief in its effects has been considerably weakened by contact with whites, there are very few, even of the most civilised, who have not a feeling of dread lest its evil influence should be directed against them by an enemy. The modes of practising sorcery are various, but there is still something similar in them, wherever practised.

In all these tribes there were and are men who practised what may be called sorcery. The whites knew them as doctors, and the blackfellows by various names. The Wonghi, for instance, call them *Walmera*. A doctor is believed to acquire his powers in one or two ways, either by being trained from boyhood by his father, or by being instructed by the spirits of the dead. The Ta-ta-thi tell a story of a renowned sorcerer which is very characteristic. It is said that he cut off a large circular piece of skin and fat from a dead woman's abdomen. This he kept until dry, and then cutting a small piece off and sucking it, the dead woman's "gumatch" (ghost) bore him up from the ground and took him to the sky, which is thought to be a solid vault. In the sky there was a hole or window guarded by a gumatch. The man procured admittance through this window, and was permitted to wander in the country beyond, where his spirit would eventually dwell. The friendly gumatch, having imparted to him valuable knowledge, did not permit him to

¹ The Wonghi call a boy *Eramurrung*; when being initiated, *Bimbadjeri* for a few months, after that *Bigumjeri*; when middle-aged, *Gibera*, and when old, *Giribung*.

² Among a few of the tribes in the north-western parts of New South Wales, I have heard that circumcision is practised. It is not known in the tribes I herein describe. I am told that wherever circumcision is practised, another operation is performed upon the men for the purpose of preventing a too rapid increase of population, but I have not sufficient data as to the localities in which this operation is customary to say whether the above is the true reason.

remain, and he returned to earth. The remainder of the dried skin he cut into small pieces, which, having been properly treated with blood, fat, and raddle, were believed to have formed for him a powerful poison.

One of the most dreaded arts of the sorcerer is the abstraction of the kidney fat of some victim. The operation is believed to be performed in the following manner. A string about six feet long is made of human hair taken from the dead. This is attached to the small bone of a kangaroo, and the power of the spell is considered to be increased by having previously anointed the bone with human kidney fat. All being now prepared, the sorcerer in the dead of night steals towards the camp of his victim, while at the same time a friend and accomplice moves a magic wand, somewhat resembling the Kallak, or sacred instrument already mentioned. This produces a low noise, which is supposed to throw the unfortunate object of the machinations into a profound sleep. The sorcerer having stealthily approached the sleeping place of his victim, fastens the string round his throat and legs, and carries him away to a distance of a quarter of a mile, where he makes an incision in his side and removes the kidney fat. The incision heals instantaneously by his magic art by merely pressing it together with the finger and thumb. The man is borne back to his camp, and is utterly unconscious that anything has taken place, but in a month or so he sickens and eventually dies.

The natives do not believe in death from natural causes ; therefore all sickness is attributed to the agency of sorcery, and counter charms are used to destroy its effect. Many of the remedies are ridiculous in the extreme. I have seen a man suffering from a serious cold, which he assured me was the result of a spell exercised against him by an enemy in a neighbouring tribe. He had a string made from opossum fur fastened round his body and held by a doctor, seated at a distance of five or six paces from the patient. The doctor had a vessel containing water by his side, and at short intervals would take a mouthful and keep it in his mouth, while at the same time he rubbed that part of the string which he held in his hands rapidly across his gums, till blood came and mingled with the water in his mouth, which every now and then he spat out. I asked the sick man how this operation could possibly effect a cure, and he told me that the blood did not come from the doctor's gums as I had innocently supposed, but that it came from his (the patient's) body, and passed along the string into the doctor's mouth. He said that the blood so drawn from him contained the magic with which his enemy had afflicted him.

I have seen very ugly wounds received in fighting cured by an application of clay, put on sufficiently thick to entirely exclude the air.

There is a deadly practice of inflicting injury possessed by some of the tribes of the Murray River, but I have never heard of it in any of those east of the Darling River. A piece of bone is sharpened to a very fine point, and is inserted into a decaying corpse, being left there for some time, until it becomes thoroughly saturated with the poison. It is then wrapped up with some of the putrid matter and kept ready for use. A very slight stab with this is said to cause death.

In all these tribes there are men who profess to make rain, and I should imagine that the position of rainmaker for some of the districts of New South Wales would be no sinecure; it is perhaps fortunate for these gentlemen that the plan of remuneration is not payment by results. Although the operations of the rainmaker so often result in failure, he is not in the least disengaged, and, like the doctors, invariably attributes his want of success to the counteracting influence of an enemy.

In the Ta-ta-thi tribe the rainmaker uses a piece of transparent quartz, which he wraps up in emu feathers, having first broken off a small piece of it, which he spits towards the sky. The quartz and feathers are then soaked in water, and carefully hidden somewhere.

In the Keramin tribe the method is that the rainmaker retires to the bed of a creek, with a round flat stone, on which he allows a little water to drop, and then carefully covers it over and conceals it.

The rainmaker is very careful not to let any one see any part of this performance. If it failed he would no doubt be silent, while if rain came within a short time he would take the credit to himself. But in justice to the aboriginal sorcerers I must say that they are as firm believers in magic as their friends.

§ 9. *Death and Spiritland.*

As a man's death is never supposed to have occurred naturally, except as the result of accident, or from a wound in battle, the first thing to be done when a death occurs is to endeavour to find out the person whose spells have brought about the calamity. In the Wathi-wathi tribe the corpse is asked by each relative in succession to signify by some sign the person who has caused his death. Not receiving an answer, they watch in which direction a bird flies, after having passed over the deceased. This is considered an indication that the sorcerer is to be found in that direction. Sometimes the nearest relative

sleeps with his head on the corpse, which causes him, they think, to dream of the murderer. There is, however, a good deal of uncertainty about the proceedings, which seldom result in more than a great display of wrath, and of vowed vengeance against some member of a neighbouring tribe. Unfortunately this is not always the case, the man who is supposed to have exercised the death-spell being sometimes waylaid and murdered in a most cruel manner.

The following is the description of the burial ceremony among the Wathi-wathi, Ta-ta-thi, Muthi-muthi, Keramin, Wonghi, and Beri-ait tribes. Some of the relations wrap the corpse in an opossum rug, which is securely fastened round it. The body is then enveloped in a piece of netting and carried to the place of interment, the friends and relations of the deceased having their heads covered with clay as mourning. A deep grave is made on some dry site, and a fire is lighted in it, which is kept burning for some time in order to thoroughly dry it. Having removed the fire, a sheet of bark is laid in the bottom of the grave, and this is covered with a thick layer of grass. The body is lowered into the grave, and the son, or nearest relative present, is allowed to stand in it for a moment, in order that he may not forget him who has gone. Another thick layer of grass is then placed over the body, and on this a sheet of bark, after which the grave is filled up with earth.

The ground in the vicinity of the grave is swept clean, and a rude hut built over it. Friends of the deceased attend occasionally to keep the place in order for two or three months, but after a year or two the covering is pulled down and laid on the grave.

These people believe that the spirits of the dead visit the earth and are frequently seen. Male ghosts are called by the Ta-ta-thi *Nguma-gumatch*, and female ghosts *Biriup-gumatch*, and ghosts in general *Durundera*, or *Thurundera*,¹ white men are also called gumatch.

There is the greatest reluctance to speak of the dead, and the blacks will often resort to peculiar devices to avoid mentioning their names. Among a people who entertain a great fear of witchcraft and sorcery, a belief in ghosts and their power to revisit the scenes wherein their lives were passed is sure to find a place. I was one day speaking to a blackfellow on the subject, when he asked me if I had not often seen an object in the distance which I took to be a human being, but which on approaching it I found to be a black stump. I told him it was quite possible, when he said, "That fellow was gumatch, only when you came up he made himself like a stump." He assured

¹ Nguma is male and Biriup is female, while Gumatch is spirit or ghost.

me that he had once seen two gumatches, and as they appeared so suddenly, and so close to him that he was unable to run away, he tried to hit them with a "nulla-nulla" which he held in his hand, upon which they vanished.

The people of all these tribes appear to have a belief in a Deity, and in a future state of some kind. The Wathi-wathi and the Ta-ta-thi, though living in close proximity to each other, use different terms for the Deity. That of the Wathi-wathi is *Tha-tha-puli*, and that of the Ta-ta-thi is *Tulong*.¹ He is regarded as a powerful spirit, or perhaps a supreme supernatural being. They say that he came from the far north, and now lives in the sky. He told each tribe what language they were to speak. He made men and women and dogs, and the latter used to talk, but he took the power of speech from them. The Ta-ta-thi do not care to speak much of *Tulong*, and say that he does not often come to the earth. Although it seems that in many of the Australian tribes there is only a very dim idea as to the attributes of the Supreme Being and of a future state, yet in the Ta-ta-thi and its allied tribes there is certainly a belief not only in a future state of existence, but also in a system of rewards and punishments. My Ta-ta-thi informant stated that one of the doctors ascended long ago through the sky, and there saw a place where wicked men were roasted.

Makogo, an intelligent member of the Wathi-wathi tribe, gave me a succinct account of the belief of his people before they came in contact with Europeans, and expressed an opinion that, whether right or wrong, they would have been better off now had their beliefs never been disturbed.

The Wathi-wathi made, according to him, a distinction between the ghost and the spirit, as we might do between our soul and spirit. The moment it leaves the body it is called *Bo-oki*, but afterwards the ghost of a dead man is called *Boongarnitchie*. The *Boongarnitchie* having started on its course in the sky is met by another *Boongarnitchie*, who directs him the road for good men. After proceeding some distance, he sees two roads running parallel and close together, one of which is swept clean while the other is dirty. The spirit of a good man would choose the dirty road, as it would know that the other is kept clean by bad spirits, in order to induce the unthinking to follow it. He is next met by a woman who endeavours to seduce him, but, escaping from her lures, he shortly after comes to where two women hold a rope, which they are twirling round after the manner of a skipping-rope. The woman who stands on the clear side of the road is blind,

I cannot obtain any translation or English equivalent for these names.

and endeavours to trip the Boongarnitchie, but keeping on the dirty road, and as far as possible from her, he avoids such mishap.

The next obstruction is a deep and narrow pit extending across the two roads, from which flames alternately rise and fall. Watching his opportunity, the good spirit leaps across in safety, and is then met by two very old women, who take care of him till he becomes accustomed to his new abode. After a time the Deity, Tha-tha-puli, comes with a host of spirits to see the new arrival, and to try his strength. A "nulla-nulla" is given by Tha-tha-puli to one of the old women, who hands it to him. A number of emus are next driven past, at one of which the weapon is hurled, and the emu stricken down. When the Wathi-wathi sees a shooting star they believe it to be the passage of such a nulla-nulla through space, and say, "Tha-tha-puli is trying the strength of some new spirit." The spirit of a bad man, if it escapes the traps that are set for it, is sure to fall into the hell of fire. Many of the natives have had their beliefs modified by contact with the whites, and I feel doubtful whether the pit of fire was not of this kind, and questioned my informant very closely on the subject, but he assured me that there was no doubt whatever that the above was the exact belief of his tribe before the settlement of the country by the white men.

§ 10. *The Languages.*

Although there is a very wide diversity in the languages and dialects spoken by the Australian aborigines, there is no doubt that they have all sprung from the same source, and it is remarkable that some words are the same or nearly the same in tribes very far apart. Thus I find "tina" or "dhina" (foot) in use by tribes of Victoria, Queensland, and New South Wales, while the word for head is totally different in each. These languages appear to be very deficient in metaphysical expressions, and have very few generic terms.

There is a name for every tree and plant that grows, as well as for the animal creation, from the kangaroo down to the most insignificant insect, and I have often been struck with the facility with which even children acquire and retain a knowledge of the names of these different things.

The following is a comparative table of words in the languages spoken by the different tribes dealt with in these notes:—

English.	Keramin.	Beri-ait.	Barkinji.
Man ..	Narik ..	Wa-im-budthin ..	Wa-imbi.
Woman ..	Gooram ..	Kümbuka ..	Nüungü.
Boy ..	Irow ..	Birillo ..	Künfunds.
Girl ..	Bi-irow ..	Wüngü ..	Katchu.
Young woman ..	Wakwak ..	Tamba ..	Tallaru.
Baby ..	Biranootch ..	Katchaluka ..	Moatpu.
Head ..	Dirirt ..	Tartoo ..	Tartoo.
Hair ..	Dirirt Kitch ..	Bukki ..	Bulki.
Brains ..	Petuledo ..	Tartoo birti ..	Tartoo bira.
Forehead..	Dene ..	Biko ..	Pikü.
Eye ..	Mi ..	Mi-iki ..	Mi-iki.
Cheek ..	N'gelriging ..	N'girili ..	N'girili.
Lips ..	Dhuk ..	Mimi ..	Mimi.
Teeth ..	Rük ..	Andhi ..	Andhi.
Tongue ..	Ma-at ..	Turling ..	Talling.
Ear ..	Mung ..	Uri ..	Munga.
Chin ..	Mit ..	Mirti ..	Murti.
Beard ..	Knak ..	Waku bulki ..	Bulki.
Moustache ..	Thukitch ..	Muna bulki ..	Murnü bulki.
Throat ..	Toarkimura ..	Küngaru ..	Birnbah.
Neck ..	N'guru ..	Berinbah ..	Kurengula.
Breast ..	Bi-ee ..	Bundhüli ..	Bundhüla.
Back ..	Kump ..	Turna ..	Turna.
Shoulder blade ..	Nyk niwill ..	Karta bina ..	Karta bina.
Shoulder ..	Niwill ..	Karta ..	Karto.
Arm ..	Mul ..	Wunya ..	Wunya.
Elbow ..	Boort ..	Kop ..	Murnkü.
Wrist ..	Ka-ink mul ..	Ilpabrend ..	N'gürnü.
Hand ..	G'wan ..	Murra ..	Murra.
Thumb ..	Knaki-g'wan ..	Utu-tu-murra ..	Uma murra.
Little finger ..	N'git g'wan ..	Ilki murra ..	Ilki murra.
Side ..	Tarnarea ..	Tirkiki ..	Tirkiki.
Ribs ..	Muntha ..	Bunda ..	Bind.
Heart ..	Murnt ..	Türlü ..	Türlü.
Lungs ..	Dhalk ..	Dhalk ..	Dhalk.
Liver ..	N'gulkur ..	Tungunyah ..	Tungunyah.
Ki inneys ..	Büng-büng ..	Burthedd ..	Paindah.
Belly ..	Meart ..	Urntü ..	Kurntü.
Thigh ..	Bening ..	Karka ..	Karka.
Knee ..	Doort ..	Thingi ..	Thingi.
Leg ..	Gant ..	Yalko ..	Yelkü.
Calf ..	Bum n'gunt ..	Unda burtunya ..	Unda.
Foot ..	Dhin ..	Thuia ..	Thuia.
Emu ..	Rünganui ..	Kulthi ..	Kulthi.
Kangaroo ..	Birack ..	Turitha ..	Turlthu.
Dingo ..	Gell ..	Kirli ..	Kirli.
Hedgehog ..	Iranunk ..	Tantchili ..	Tantchili.
Iguana ..	Wiri ..	Tha kulu ..	Tha kulu.
Opossum ..	Bult ..	Yarengi ..	Yarengi.
Bandicoot ..	Mering ..	Bürennia ..	Meringyah.
Day ..	Nünk ..	Yükü ..	Yükü or Kalkui.
Daylight ..	Ba-nünk ..	Müpärkü ..	Müpärkü.
Morning ..	Wa-ing-gruimitch ..	Küyürü ..	Kürü.
Evening ..	Gin-in-nünk ..	Kalkui ..	Tünkünka.
Dark ..	Waingrui ..	Tünka ..	Thunka.
Light ..	Dhriki ..	N'ginga ..	N'gnuyah.

English.	Keramin.	Beri-ait.	Barkinji.
Moonlight ..	But-ruk ..	Bat yuka ..	Batchunya.
Dust ..	Büdth ..	Budthyara..	Büdthara.
Ghost ..	Dthow ..	Tambürü ..	Tambürü.
Egg ..	Bit ..	Birti ..	Birti.
Feathers ..	Gitch ..	Ülki ..	Pürki.
Fire ..	Nik..	Kütnika ..	Kütnid.
Flood ..	Wyrunk ..	Tülpü ..	Thülpü.
Flower ..	Mi-gurra ..	Bürni ..	Bürni.
Frost ..	Lukrui ..	Beringura ..	Mullara.
Grave ..	W'gwalth ..	Wampündüra ..	Pampanthüra.
Grass ..	Tulum ..	Muttu ..	Kulthu.
Hailstones ..	Migurra ..	Wirtu ..	Wirtu.
Hill ..	Booei ..	Dthirna ..	Tüüli.
Hungry ..	N'gow, n'gow mun ..	Wilka wilka ..	Wilka wilka.
Mountain ..	Dü-tek ..	Karnü ..	Kürnü.
Mud ..	Uldri ..	Windhya ..	Uleru.
Path ..	Dthini ..	Yerinka ..	Utherü.
Pine tree..	Mi-krai ..	Pinpah ..	Würkira.
Plain ..	Lähk ..	Bülka ..	Bülka.
Quiet ..	Nut mün ..	Mutchijah..	Mutchi.
Rain ..	Mukra ..	Mukera ..	Mukera.
Rainbow ..	Türurt ..	Muntharimbura ..	Kurinderi.
River ..	Ludt ..	Pahka ..	Pahka.
Sky ..	Teriel ..	Karabur ..	Karkunyah.
Sleep ..	Umun ..	Bumpapa ..	Emau.
Smoke ..	Dthur ..	Bü-ündü ..	Bürändü.
Stars ..	Berril ..	Burti ..	Burti.
Thunder ..	Bethung ..	Bindthi ..	Pindi.
To-morrow ..	Gün maroocy ..	Karanki ..	Kara munki.
Water ..	N'guk ..	N'gogo ..	N'goko.
Watercourse ..	Bu-yuri ..	Bürürü ..	N'gulkurra.
Whirlwind ..	Wiraynip ..	Yandanki ..	Pira-arune.
Wing ..	Wyni ..	Wy-imi ..	Wunyi.
God ..	Daint-luk ..	Nürali ..	Nürali.

English.	Wonghi.	Wathi-wathi.	Ta-ta-thi.
Man ..	Mil ..	Wüngi ..	Ngüma.
Woman ..	Wineth ..	Liorki ..	Beri-rup.
Husband..	Opón ..	Nopui ..	Mululu.
Wife ..	Opón ..	Nopui ..	Mululu.
Head ..	Bulla ..	Po-ipi ..	Derart.
Nose ..	Murutha ..	Thiandhi ..	Kup.
Eye ..	Mil ..	Mi-ingi ..	Lanung.
Tongue ..	Tallai ..	Tallung ..	Meart.
Throat ..	Nuki ..	Tulugundi ..	Gurumal.
Arm ..	Bi ..	Daki ..	Mul.
Thigh ..	Durra ..	Garipi ..	Kuppul.
Leg ..	..	Kingi ..	Ngun.
Foot ..	Dinni ..	Tinangi ..	Tin.
Sun ..	Thuni ..	Ngangi ..	Nüng.
Moon ..	Kubbitha ..	Waingaipui ..	Batchi.
Water ..	Kali ..	Ki-im ..	Ngük.
Fire ..	Wi ..	Winapi ..	Murrung.
Good ..	Witchirione ..	Biri-imuli ..	Gändgal.
Bad ..	Wari ..	Thilika ..	Nyungun.

§ 11. *Traditions.*

There are many traditions among the Australian aborigines, which to Europeans are sufficiently absurd; many of them are very obscene, and quite unfit for publication. They are, however, not more obscene or more absurd than many of the classic legends of Heathen Mythology.

There is a tradition very widespread among the tribes I am concerned with, that the earth was originally peopled by a race much more powerful, especially in the arts magic, than that which now inhabits it. This first race is in different localities known by different names, but as the legends regarding them are much the same, those of one tribe will serve for illustration.

The Wathi-wathi call them Bookoomuri, and say they were famous for fighting, hunting, &c., and were eventually changed into animals by Tha-tha-puli, who then created the present race. Others say that the Bookoomuri effected the transformation themselves, and that as animals they felt an interest in the new race that succeeded them, and imparted to it much valuable knowledge. A belief exists that the magical powers of the doctors, disease makers, and rainmakers has been handed down to them from the Bookoomuri.

The following is a tradition of the manner in which fire was procured.

Two Bookoomuri, Koorambin (a water rat) and Pandawinda (codfish), were the sole possessors of fire, which they jealously guarded in an open space among the reed-beds of the Murray River.

Many efforts were made by other Bookoomuri, and by the present race, to obtain a spark of it, but without success, till one day Karigari (a hawk), who of course had originally been a Bookoomuri, discovered Koorambin and Pandawinda in the act of cooking mussels, which they had obtained from the river. He flew up to such a height that they could not see him, and then caused a strong wind to blow the fire among the dry reeds. This was, however, extinguished. He then sent a wind from the opposite direction, and eventually a whirlwind, which scattered the fire in every direction, causing a conflagration which set the whole of the reed-beds on fire, and extending to the forests, laid waste vast tracts of country, upon which trees have never since grown, so that where there were once forests we find now immense bare plains.

The Ta-ta-thi have another version. Ngwoorangbin (water rat), who lived in the Murray River, had a large hut in which he kept the fire for the purpose of cooking the mussels which he brought out of the river. This fire he very jealously guarded,

but one day whilst he was down in the river gathering mussels, a spark flew out of the hut and was caught by Kiridka (a small hawk), who, having some inflammable materials ready, kindled a fire, by means of which he burned down the house of Ngwoorangbin, and also at the same time a large tract of forest, so that it is now open plains.

It is said that it was after this event that the blackfellows became possessed of the knowledge that fire could be obtained by friction.

Another legend is told of two Bookoomuri who had a wonderful chase after a gigantic kangaroo which lived near Hilston on the Lachlan River. He was followed by the two Bookoomuri for hundreds of miles, but they eventually lost sight of him. Following the track, however, for some days, they at last came to where another Bookoomuri, who having met the kangaroo in an exhausted state, had, with the assistance of his dog, killed it and already had partly cooked it.

The visitors were invited to partake but they refused, and waiting for a few minutes till the attention of the other was engaged on something else, they restored the kangaroo to life, to the great indignation of its captor, who immediately sent his dog after it. The two hunters, however, placed a magic spell on the dog which prevented its running. They then followed the kangaroo, and eventually killed it near the junction of the Darling and Murray Rivers. The Willandra Creek, which has a course of more than three hundred miles, is supposed to be the track of the Kangaroo when flying from its pursuers. The few hills which occur in the district are the camps of the Bookoomuri when following it.

The Méowie Creek is also supposed to be the track of some mystic animal which the Bookoomuri hunters had been pursuing.

There are many traditions of the wonderful feats performed by the Bookoomuri, and I think that most, if not all, the tribes of New South Wales, and perhaps of Australia, believe that the country was formerly inhabited by a different race from that which occupies it at the present day.

Is it possible that the totemic divisions of a tribe are connected with this belief in a race of men who afterwards became animals? It might be, for instance, that the class which has for its totems Eaglehawk, Kangaroo, Bandicoot, believes that the Bookoomuri who were transformed into those animals were the ancestors of that class. But I have no direct evidence of such a belief.

The Ta-ta-thi relate that the moon, which is supposed to be a not too-chaste female, had a special claim on a tract of country

where yams grew in abundance; that on one occasion two Kilpara women, having discovered the locality, helped themselves to some of the yams, but, being discovered in the act, were buried beneath a large pile of stones by the moon. Here they remained for some time, the stones having been placed in such a manner that they were not killed by the pressure, the intention being to destroy them by starvation. They were rescued by Rakur (the Bat), who took them to Lake Victoria, where they became his wives.

§ 12. Conclusion.

Of late very little has been done in New South Wales to ameliorate the condition of the aborigines, and although I believe that between the years 1821 and 1842 large sums of money were expended in protectorates in that colony, very little good was effected.

That our present position in respect to the original occupiers of the soil is not an equitable one, is beyond dispute. We have taken from them a country, where, after their own fashion, they were contented and happy, and in return we have bestowed on them a civilisation which destroys them.

I do not say that this could altogether have been avoided, for experience everywhere proves that races in a state of savagery, and even those races which are beginning to emerge from it, are unable to withstand the advance of European civilization. But it is to be hoped that something will be done without delay to at least ameliorate the condition of the tribes now fading from the earth under the influence of our presence.

Very little has been done so far, and that little almost entirely by private individuals, who have found time amidst arduous business avocations to collect and publish valuable records of the tribes with which they have come in contact.

Government aid is however required in the matter, not only to carry out thorough researches into the past and present history of the tribes, but also as to the best measures for the amelioration of their condition.

It seems strange that in an age in which so much time and money are devoted to science, so little should have been done towards securing an authentic record of the organisation of aboriginal society. Such a record would be a most valuable addition to the history of mankind, and the cost of securing it would be trivial in comparison to its value when secured.

ANNUAL GENERAL MEETING.

JANUARY 27TH, 1885.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The notice convening the meeting was read by the DIRECTOR.

The Minutes of the last Anniversary Meeting were read and signed.

The PRESIDENT then declared the ballot open, and appointed Mr. BEAUFORT and Mr. R. MELDOLA scrutineers.

The Treasurer's Report for the year 1884 was read by the DIRECTOR in the absence of the Treasurer.

TREASURER'S REPORT.

On a comparison of the present statement of Receipts and Payments with that of last year, it will be seen that the amount received from ordinary members for subscriptions is £514 10s., as against £484 1s. last year. The arrears got in have been £19 19s., against £51 9s. in 1883.

It was deemed advisable to draw a certain amount from the Reserve Fund, in order to meet the expenses connected with the removal from St. Martin's Place to Hanover Square, and the Trustees were accordingly instructed to sell £199 12s. 10d. Metropolitan stock, which produced the sum of £217 2s. 2d. This reduces the amount invested to £900 stock. It will be observed, however, that the ordinary expenses of the year, notwithstanding various incidental expenses due to the change of offices, do not exceed those of previous years. The rent of the new rooms, including lighting and heating, will be £165 per annum. £153 was paid during the past year, one quarter and a half having been spent at St. Martin's Place.

The cost of printing four numbers of the *Journal* has been reduced by nearly £50, and the miscellaneous printing also shows a reduction of nearly £8.

The amount paid for illustrating the *Journal* has been £31 13s. 9d., and an old account that had been outstanding for several years, but not previously rendered, together with the

ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

Receipts and Payments for the Year ending 31st December, 1884.

RECEIPTS.	PAYMENTS.
BALANCES, January 1st, 1884:	
At Bankers'	£ 56 3 3
In Office.....	2 2 6½
	<u>57 5 9½</u>
SUBSCRIPTIONS:	
Paid to Messrs. Roberts & Co.	86 1 0
" " Collector	429 9 0
" " due 1883	19 19 0
	<u>534 9 0</u>
DONATIONS TOWARDS EXPENSES OF REMOVAL:	
Professor Flower	10 0 0
Alfred Morrison, Esq.	10 0 0
	<u>20 0 0</u>
ILLUSTRATION FUND:	
W. D. Gooch, Esq.	21 5 0
SALE OF PUBLICATIONS:	
Messrs. Trübner & Co.	71 6 8
Messrs. Longmans & Co.	0 16 8
	<u>71 6 8</u>
Office:	
Journals	20 15 1
Other Publications	8 14 0
	<u>101 12 5</u>
SALE OF £139 12s. 10d. MET. STOCK.....	217 2 2
RENT, one year to September, 1884.....	£ 153 3 0
PRINTING:	
Journal, Nos. 44, 45, 46, 47	206 13 9
Miscellaneous	31 4 2½
LITHOGRAPHY, &c.	31 13 9
For previous numbers of Journal	32 5 6
SALARIES AND COLLECTOR'S COMMISSION	166 15 3
POSTAGES:	
Journal	16 0 11½
Letters and Post Cards	12 10 9½
Book Parcels and Circulars	2 1 4½
	<u>30 13 1½</u>
ADVERTISING.....	
EXPENSES OF MOVING AND FITTING NEW ROOMS:	
Van and men	11 19 6
Office fittings and repairs	73 15 8
	<u>85 15 2</u>
OFFICE:	
Stationery	8 4 2½
Receipt Stamps, &c., Power of Attorney	3 7 11
Insurance	1 0 0
Carriage of Parcels	3 12 1
Miscellaneous.....	2 11 8½
	<u>18 15 11</u>

Treasurer's Financial Statement.

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DIVIDENDS:			
Three quarters on £1,099 12s. 10d., and one quarter on £900, 3 <i>½</i> per. cent stock	35 19 6	Mrs. Ayres, gratuity for 1883	15 0 0
"		coals and lights.....	2 6 6
"		assistance and cleaning rooms, 12 18 10	
"		refreshments at Evening Meetings.....	26 0 0
			56 5 4
BALANCES:			
At Bankers'	165 3 1		
In Office.....	5 6 6 <i>½</i>		
			170 9 7 <i>½</i>
			£987 13 10 <i>½</i>
			<hr/>

Examined and found correct,
(Signed) EDWARD W. BRABROOK, } Auditors
WORTHINGTON G. SMITH, }

23rd January, 1885.

APPROXIMATE STATEMENT OF LIABILITIES AND ASSETS ON JANUARY 1ST, 1885.

LIABILITIES.	ASSETS.
Sundry Creditors, namely:—	Balances
Rent	Balances
Printers account	£900 Metropolitan Consolidated Stock at 10 <i>½</i>
Library fittings	Zoological Society Contribution to expenses of Library
Balance.....	Estimated value of Library, stock of publications, furniture, &c
	<hr/>
	£4,018 12 7 <i>½</i>

illustrations provided by Mr. Gooch for his paper on the Stone Age in South Africa, published in a former number of the *Journal*, make the total amount paid for illustration £63 19s. 3d.

The cost of removal and of office fittings has been £85 15s. 2d. in addition to £100 to be contributed by the Zoological Society, but which had not been received when the accounts were made up.¹

The house expenses have been rather heavier this year, but this is accounted for by the fact that we have practically paid for two years' cleaning of the rooms, &c.; the amount will be considerably reduced in future years.

Deducting the expenses directly due to removal, and the cost of illustrating *previous numbers* of the *Journal*, it will be seen that the current expenses of the year have been £14 2s. 4d. less than last year.

F. G. H. PRICE.

¹ This amount has been received since.

Mr. F. W. RUDLER, the Director, then read the following Report:—

REPORT OF THE COUNCIL OF THE ANTHROPOLOGICAL INSTITUTE
OF GREAT BRITAIN AND IRELAND FOR 1884.

During the past year thirteen ordinary meetings have been held, in addition to the Anniversary Meeting. In the course of the year the following thirty-five papers have been communicated to the Institute:—

1. "On the Ethnology of the Congo and South Western Africa." By H. H. Johnston, Esq.
2. "On a Human Skull found near Southport." By G. B. Barron, Esq., M.D.
3. "Traces of Commerce in Prehistoric Times." By Miss A. W. Buckland.
4. "On some Palæolithic Fishing Implements from the Stoke Newington and Clapton Gravels." By John T. Young, Esq., F.G.S.
5. "The Nanga, or Sacred Stone Enclosure of Wainimala, Fiji." By the Rev. Lorimer Fison, M.A.
6. "On the Melanesian Languages." By the Rev. R. H. Codrington, M.A.
7. "On the Longstone and other prehistoric remains in the Isle of Wight." By A. L. Lewis, Esq., F.C.A.
8. "On the Cromlech of Er-Lanic." By Admiral F. S. Trenlett.
9. "On the Antiquity of Man in Ireland." By W. J. Knowles, Esq.
10. "On a Portion of a Human Skull of supposed Palæolithic Age from near Bury St. Edmunds." By H. Prigg, Esq.
11. "Note on some Ancient Egyptian Bronze Implements." By F. G. Hilton Price, Esq., F.S.A.
12. "The Frankfurt Craniometrical Code." By J. G. Garson, Esq., M.D.
13. "Note on a Portrait of an Aboriginal Tasmanian." By Sir Richard Owen, K.C.B., F.R.S.
14. "On the Ethnology of the Sudán." By Professor A. H. Keane, B.A.
15. "On the Ethnology of the Andaman Islands." By E. H. Man, Esq.
16. "Additional Observations on the Osteology of the Natives of the Andaman Islands." By Professor Flower, LL.D., F.R.S., *President*.
17. "Notes on Remains from Cemeteries in the Island of Antiparos." By Theodore Bent, Esq.
18. "On the Koeboes of Sumatra." By H. O. Forbes, Esq.
19. "On the Osteology of the Koeboes of Sumatra." By J. G. Garson, Esq., M.D.
20. "On the Deme and the Horde." By A. W. Howitt, Esq., F.G.S., and the Rev. L. Fison, M.A.
21. "On African Symbolic Language." By the Rev. C. A. Gollmer.
22. "On the Size of the Teeth as a Character of Race." By Professor Flower, LL.D., F.R.S., *President*.
23. "On Flint Implements found at Reading." By O. A. Shrubsole, Esq., F.G.S.
24. "Phœnician Intercourse with Polynesia." By S. M. Curl, Esq., M.D.
25. "On a Hindu Prophetess." By M. J. Walhouse, Esq.
26. "On the Anthropometric Laboratory at the late Health Exhibition." By Francis Galton, Esq., F.R.S.
27. "Ethnological Notes on the People of the Island of Buru." By H. O. Forbes, Esq., F.Z.S.
28. "Note on the Abnormal Dentition of a Hairy Boy from Russia." By W. H. Coffin, Esq., M.D.
29. "Facts suggestive of Prehistoric Intercourse between East and West." By Miss A. W. Buckland.

30. "On some Doubtful or Intermediate Articulations." By Horatio Hale, Esq.
 31. "Remarks on the Customs and Language of the Iroquois." By Mrs. Erminie A. Smith.
 32. "Marriage Customs and Relationships among the Australian Aborigines." By Sir John Lubbock, Bart., F.R.S.
 33. The Jeraeil, or Initiation Ceremonies of the Kurnai Tribe." By A. W. Howitt, Esq., F.G.S.
 34. "On a Collection of Human Skulls from Torres Strait." By Oldfield Thomas, F.Z.S.
 35. "On some Tribes of New South Wales." By A. L. P. Cameron, Esq.

Four numbers of the *Journal* have been issued to members during the year, namely, Nos. 46, 47, 48, and 49. These contain 472 pages of letterpress, thirty-five plates, and numerous tables. The Institute is indebted to several authors, especially to Mr. Worthington Smith, for illustrating their papers at their own expense.

During the year 27 new members have been elected.

The former and present state of the Institute, with regard to the number of Members, are shown in the following Table:—

	Honorary.	Corre-sponding.	Com-pounders.	Annual Subscribers.	Total.
January 1st, 1884	45	74	90	270	479
Since elected ..	+ 3	+ 5	+ 3	+ 16	+ 27
Since deceased ..	- 3	..	- 2	- 7	- 12
Since retired ..	..	..	..	- 8	- 9
January 1st, 1885	45	79	91	271	486

The Council regrets to report that the Institute has lost, through death, three Honorary Members, namely, Dr. J. Aitken Meigs, Professor Perty, and Dr. Phoebus; and the following Ordinary Members, namely: Mr. W. Bragge, Mr. J. Lancaster, Mr. J. Milligan, Mr. G. Morrison, Mr. J. Dormer Neal, Mr. C. Stenning, Dr. Allen Thomson, Mr. Nicholas Trübner, and Mr. Alfred Tylor. In this list there are two names which the Council would especially recall as those of active Members. Dr. Allen Thomson was for some time a Vice-President, and Mr. Alfred Tylor had not only served on the Council, but had from time to time contributed papers to the Institute.

At the last Anniversary Meeting the President referred to the contemplated removal of the Institute to the premises of

the Zoological Society. Possession of the new rooms in Hanover Square was taken early in the spring, and the first evening meeting was held there on April 22nd. It is a source of satisfaction to the Council to find that the change has in every way conduced to the increased convenience of the members. The admirably appointed meeting-room offers many advantages over the old room in which our meetings were formerly held; the books are much better accommodated than they were in St. Martin's Place; and the stock of the *Journal*, instead of cumbering the shelves of the Library, is now stored in a room on the basement of the building. On the whole, the Council feels that it may congratulate the members on now occupying a more convenient set of rooms than any held at previous periods.

The removal and the fittings of the office and Library entailed an expenditure of £185 15s. 2d., of which sum £100 has been contributed by the Zoological Society, on condition that an annual payment of £5 be added to the rent.

The Library has been enriched during the year by a large number of donations, including some especially valuable folios of photographs by Prince Roland Bonaparte. But as the donations of books are regularly acknowledged in the proceedings printed in the *Journal*, it seems needless to repeat the list of donors in this place.

The increased expenditure in the new premises requires an augmentation of income, and the Council would take this opportunity of strongly urging members to further the objects of the Institute by inducing such of their friends as are interested in anthropological subjects to apply for membership. It is only by possessing a larger income that the Quarterly *Journal* can be efficiently illustrated, and the work of the Institute extended.

The Reports were adopted on the motion of Mr. W. G. SMITH, seconded by Mr. T. V. HOLMES.

The PRESIDENT then delivered the following address:—

PRESIDENT'S ADDRESS.

ADDRESS delivered at the ANNIVERSARY MEETING of the ANTHROPOLOGICAL INSTITUTE of GREAT BRITAIN and IRELAND, January 27th, 1885, on the CLASSIFICATION of the VARIETIES of the HUMAN SPECIES. By the President, Professor W. H. FLOWER, LLD., V.P.R.S., P.Z.S., &c., Director of the Natural History Department of the British Museum.

ON the occasion of the Anniversary Meeting of the Institute last year, I endeavoured to sum up in a few words the principal aims and scope of the science of Anthropology as now understood.

I then gave reasons for my belief that the discrimination and description of the characteristics of the various races of men is one of, if not the most practically important of the different branches into which the whole of the great subject is divided. It was also stated that, although other characters, such as those derived from language, social customs, traditions, religious beliefs, and from intellectual and moral attributes, were by no means to be neglected, structural or anatomical characters are those upon which in the end most reliance must be placed in discriminating races.

I propose now to give a brief summary of the results attained up to the present time by the study of the racial characters of the human species, and to show what progress has been made towards arriving at a natural classification of the varieties into which the species may be divided.

The most ordinary observation is sufficient to demonstrate the fact that certain groups of men are strongly marked from others by definite characters common to all members of the group, and transmitted regularly to their descendants by the laws

of inheritance. The Chinaman and the Negro, the native of Patagonia and the Andaman Islander, are as distinct from each other structurally as are many of the so-called species of any natural group of animals. Indeed, it may be said with truth that their differences are even greater than those which mark the groups called genera by many naturalists of the present day. Nevertheless, the difficulty of parcelling out all the individuals composing the human species into certain definite groups, and of saying of each man that he belongs to one or other of such groups, is insuperable. No such classification has ever, or indeed can ever, be obtained. There is not one of the most characteristic, most extreme forms, like those I have just named, from which transitions cannot be traced by almost imperceptible gradations to any of the other equally characteristic, equally extreme, forms. Indeed, a large proportion of mankind is made up, not of extreme or typical, but of more or less generalised or intermediate, forms, the relative numbers of which are continually increasing, as the long-existing isolation of nations and races breaks down under the ever-extending intercommunication characteristic of the period in which we live.

The difficulties of framing a natural classification of man, or one which really represents the relationship of the various minor groups to each other, are well exemplified by a study of the numerous attempts which have been made from the time of Linnæus and Blumenbach onwards. Even in the first step of establishing certain primary groups of equivalent rank there has been no accord. The number of such groups has been most variously estimated by different writers from two up to sixty or more, although it is important to note that there has always been a tendency to revert to the four primitive types sketched out by Linnæus—the European, Asiatic, African, and American—expanded¹ into five by Blumenbach by the addition of the Malay, and reduced by Cuvier to three by the

¹ The Malay of Blumenbach was a strange conglomeration of the then little known Australian, Papuan, and true Malay types.

suppression of the two last. After a perfectly independent study of the subject, extending over many years, I cannot resist the conclusion, so often arrived at by various anthropologists, and so often abandoned for some more complex system, that the primitive man, whatever he may have been, has in the course of ages divaricated into three extreme types, represented by the Caucasian of Europe, the Mongolian of Asia, and the Ethiopian of Africa, and that all existing individuals of the species can be ranged around these types, or somewhere or other between them. Large numbers are doubtless the descendants of direct crosses in varying proportions between well-established extreme forms; for, notwithstanding opposite views formerly held by some authors on this subject, there is now abundant evidence of the wholesale production of new races in this way. Others may be the descendants of the primitive stock, before the strongly marked existing distinctions had taken place, and therefore present, though from a different cause from the last, equally generalised characters. In these cases it can only be by most carefully examining and balancing all characters, however minute, and finding out in what direction the preponderance lies, that a place can be assigned to them. It cannot be too often insisted on that the various groups of mankind, owing to their probable unity of origin, the great variability of individuals, and the possibility of all degrees of intermixture of races at remote or recent periods of the history of the species, have so much in common that it is extremely difficult to find distinctive characters capable of strict definition, by which they may be differentiated. It is more by the preponderance of certain characters in a large number of members of a group, than by the exclusive or even constant possession of these characters, in each of its members, that the group as a whole must be characterised.

Bearing these principles in mind, we may endeavour to formulate, as far as they have as yet been worked out, the distinctive features of the typical members of each of the three

great divisions, and then show into what subordinate groups each of them seems to be divided.

To begin with the Ethiopian, Negroid or Melanian, or "black" type. It is characterised by a dark, often nearly black, complexion; black hair, of a kind called "frizzly" or, incorrectly, "woolly," *i.e.*, each hair being closely rolled up upon itself, a condition always associated with a more or less flattened or elliptical transverse section; a moderate or scanty development of beard; an almost invariably dolichocephalic skull; small and moderately retreating malar bones (*mesopic face*¹); a very broad and flat nose, platyrhine in the skeleton; moderate or low orbits; prominent eyes; thick, everted lips; prognathous jaws; large teeth (*macrodont*); a narrow pelvis (index in the male 90 to 100); a long forearm (*humero-radial index* 80), and certain other proportions of the body and limbs which are being gradually worked out and reduced to numerical expression as material for so doing accumulates.

The most characteristic examples of the second great type, the Mongolian or Xanthous, or "yellow," have a yellow or brownish complexion; coarse straight hair, without any tendency to curl, and nearly round in section, on all other parts of the surface except the scalp, scanty and late in appearing; a skull of variable form, mostly mesocephalic (though extremes both of dolichocephaly and brachycephaly are found in certain groups of this tribe); a broad and flat face, with prominent, anteriorly-projecting malar bones (*platyopic face*); nose small, mesorhine or leptorrhine; orbits high and round, with very little development of glabella or supraciliary ridges; eyes sunken, and with the aperture between the lids narrow; in the most typical members of the group with a vertical fold of skin over the inner canthus, and with the outer angle slightly elevated; jaws mesognathous; teeth of moderate size (*mesodont*); the proportions of the limbs and form of the pelvis have yet to be worked out, the results at

¹ Oldfield Thomas, in a paper read before the Anthropological Institute, Jan. 13, 1885.

present obtained showing great diversity among different individuals of what appear to be well-marked races of the group, but this is perhaps due to the insufficient number of individuals as yet examined with accuracy.

The last type, which, for want of a better name, I still call by that which has the priority, Caucasian, or "white," has usually a light-complexioned skin (although in some, in so far aberrant cases, it is as dark as in the Negroes); hair fair or black, soft, straight, or wavy, in section intermediate between the flattened and cylindrical form; beard fully developed; form of cranium various, mostly mesocephalic; malar bones retreating; face narrow and projecting in the middle line (pro-opic); orbits moderate; nose narrow and prominent (leptorrhine); jaws orthognathous; teeth small (microdont); pelvis broad (pelvic index of male 80); forearm short (relatively to humerus) (humero-radial index 74).

In endeavouring further to divide up into minor groups the numerous and variously-modified individuals which cluster around one or other of these great types, a process quite necessary for many practical or descriptive purposes, the distinctions afforded by the study of physical characters are often so slight that it becomes necessary to take other considerations into account, among which geographical distribution and language hold an important place.

I. The Ethiopian or Negroid races may be primarily divided as follows:—

A. African or typical Negroes—inhabitants of all the central portion of the African continent, from the Atlantic on the west to the Indian Ocean on the east, greatly mixed all along their northern frontier with Hamitic and Semitic Melanochroi, a mixture which, taking place in various proportions and under varied conditions, has given rise to many of the numerous races and tribes inhabiting the Soudan.

A branch of the African Negroes are the Bantu—distinguished chiefly, if not entirely, by the structure of their lan-

guage. Physically indistinguishable from the other negroes where they come in contact in the Equatorial regions of Africa, the Southern Bantu, or Kaffirs, as they are generally called, show a marked modification of type, being lighter in colour, having a larger cranial capacity, less marked prognathism, and smaller teeth. Some of these changes may possibly be due to crossing with the next race.

B. The Hottentots and Bushmen form a very distinct modification of the Negro race. They formerly inhabited a much larger district than at present; but, encroached upon by the Bantu from the north and the Dutch and English from the south, they are now greatly diminished, and indeed threatened with extinction. The Hottentots especially are much mixed with other races, and under the influence of a civilisation which has done little to improve their moral condition, they have lost most of their distinctive peculiarities. When purebred they are of moderate stature, have a yellowish-brown complexion, with very frizzly hair, which, being less abundant than that of the ordinary negro, has the appearance of growing in separate tufts. The forehead and chin are narrow, and the cheekbones wide, giving a lozenge shape to the whole face. The nose is very flat, and the lips prominent. In their anatomical peculiarities, and in almost everything except size, the Bushmen agree with the Hottentots; they have, however, some special characters, for while they are the most platyrhine of races, the prognathism so characteristic of the Negro type is nearly absent. This, however, may be the retention of an infantile character so often found in races of diminutive stature, as it is in all the smaller species of a natural group of animals. The cranium of a Bushmen, taken altogether, is one of the best marked of any race, and could not be mistaken for that of any other. Their relation to the Hottentots, however, appears to be that of a stunted and outcast branch, living the lives of the most degraded of savages among the rocky caves and mountains of the land of which the comparatively civilised and pastoral Hottentots inhabited the plains.

Perhaps the Negrillos of Hamy, certain diminutive round-headed people of Central and Western Equatorial Africa, may represent a distinct section of the Negro race, but their numbers are few, and they are very much mixed with the true Negroes in the districts in which they are found. They form the only exceptions to the general dolichocephaly of the African branch of the Negroid race.

C. *Oceanic Negroes or Melanesians*.—These include the Papuans of New Guinea and the majority of the inhabitants of the islands of the Western Pacific, and form also a substratum of the population, greatly mixed with other races, of regions extending far beyond the present centre of their area of distribution.

They are represented, in what may be called a hypertypical form, by the extremely dolichocephalic Kai Colos, or mountaineers of the interior of the Fiji Islands, although the coast population of the same group have lost their distinctive characters by crossing. In many parts of New Guinea and the great chain of Islands extending eastwards and southwards ending with New Caledonia, they are found in a more or less pure condition, especially in the interior and more inaccessible portions of the islands, almost each of which shows special modifications of the type recognisable in details of structure. Taken altogether their chief physical distinction from the African Negroes lies in the fact that the glabella and supra-orbital ridges are generally well developed in the males, whereas in Africans this region is usually smooth and flat. The nose, also, especially in the northern part of their geographical range, New Guinea, and the neighbouring islands, is narrower (often mesorrhine) and prominent. The cranium is generally higher and narrower. It is, however, possible to find African and Melanesian skulls quite alike in essential characters.

The now extinct inhabitants of Tasmania were probably pure, but aberrant, members of the Melanesian group, which have undergone a modification from the original type, not by mixture

with other races, but in consequence of long isolation, during which special characters have gradually developed. Lying completely out of the track of all civilisation and commerce, even of the most primitive kind, they were little liable to be subject to the influence of any other race, and there is in fact nothing among their characters which could be accounted for in this way, as they were intensely, even exaggeratedly, Negroid in the form of nose, projection of mouth, and size of teeth, typically so in character of hair, and aberrant chiefly in width of skull in the parietal region. A cross with any of the Polynesian or Malay races sufficiently strong to produce this would, in all probability, have also left some traces on other parts of their organisation.

On the other hand, in many parts of the Melanesian region there are distinct evidences of large admixture with Negrito, Malay, and Polynesian elements in varying proportions, producing numerous physical modifications. In many of the inhabitants of the great island of New Guinea itself and of those lying around it this mixture can be traced. In the people of Micronesia in the north, and New Zealand in the south, though the Melanesian element is present, it is completely overlaid by the Polynesian, but there are probably few, if any, of the islands of the Pacific in which it does not form some factor in the composite character of the natives.

The inhabitants of the continent of Australia have long been a puzzle to ethnologists. Of Negroid complexion, features, and skeletal characters, yet without the characteristic frizzly hair, their position has been one of great difficulty to determine. They have, in fact, been a stumbling-block in the way of every system proposed. The solution, supported by many considerations too lengthy to enter into here, appears to lie in the supposition that they are not a distinct race at all, that is, not a homogeneous group formed by the gradual modification of one of the primitive stocks, but rather a cross between two already-formed branches of these stocks. According to this view,

Australia was originally peopled with frizzly-haired Melanesians, such as those who still do, or did before the European invasion, dwell in the smaller islands which surround the north, east, and southern portions of the continent, but that a strong infusion of some other race, probably a low form of Caucasian Melanochroi, such as that which still inhabits the interior of the southern parts of India, has spread throughout the land from the northwest, and produced a modification of the physical characters, especially of the hair. This influence did not extend across Bass's Straits into Tasmania, where, as just said, the Melanesian element remained in its purity. It is more strongly marked in the northern and central parts of Australia than on many portions of the southern and western coasts, where the lowness of type and more curly hair, sometimes closely approaching to frizzly, show a stronger retention of the Melanesian element. If the evidence should prove sufficiently strong to establish this view of the origin of the Australian natives, it will no longer be correct to speak of a primitive Australian, or even Australoid, race or type, or look for traces of the former existence of such a race anywhere out of their own land. Absolute proof of the origin of such a race is, however, very difficult, if not impossible, to obtain, and I know nothing to exclude the possibility of the Australians being mainly the direct descendants of a very primitive human type, from which the frizzly-haired Negroes may be an offset. This character of hair must be a specialisation for it seems very unlikely that it was the attribute of the common ancestors of the human race.

D. The fourth branch of the Negroid race consists of the diminutive round-headed people called Negritos, still found in a pure or unmixed state in the Andaman Islands, and forming a substratum of the population, though now greatly mixed with invading races, especially Malays, in the Philippines, and many of the islands of the Indo-Malayan Archipelago, and perhaps of some parts of the southern portion of the mainland of Asia. They also probably contribute to the varied population of the

great island of Papua or New Guinea, where they appear to merge into the taller, longer-headed and longer-nosed Melanesians proper. They show, in a very marked manner, some of the most striking anatomical peculiarities of the Negro race, the frizzly hair, the proportions of the limbs, especially the humero-radial index, and the form of the pelvis; but they differ in many cranial and facial characters, both from the African Negroes on the one hand, and the typical Oceanic Negroes, or Melanesians, on the other, and form a very distinct and well-characterised group.

II.—The principal groups that can be arranged round the Mongolian type are—

A. The Eskimo, who appear to be a branch of the typical North Asiatic Mongols, who in their wanderings northwards and eastwards across the American continent, isolated almost as perfectly as an island population would be, hemmed in on one side by the eternal Polar ice and on the other by hostile tribes of American Indians, with which they rarely, if ever, mingled, have gradually developed characters most of which are strongly-expressed modifications of those seen in their allies who still remain on the western side of Behring's Straits. Every special characteristic which distinguishes a Japanese from the average of mankind is seen in the Eskimo in an exaggerated degree, so that there can be no doubt about their being derived from the same stock. It has also been shown that these special characteristics gradually increase from west to east, and are seen in their greatest perfection in the inhabitants of Greenland; at all events, in those where no crossing with the Danes has taken place. Such scanty remains as have yet been discovered of the early inhabitants of Europe present no structural affinities to the Eskimo, although it is not unlikely that similar external conditions may have led them to adopt similar modes of life. In fact, the Eskimo are such an intensely specialized race, perhaps the most specialized of any in existence, that it is probable that they are of comparatively late origin, and were

not as a race contemporaries with the men whose rude flint tools found in our drifts excite so much interest and speculation as to the makers, who have been sometimes, though with little evidence to justify such an assumption, reputed to be the ancestors of the present inhabitants of the northernmost parts of America.

B. The typical Mongolian races constitute the present population of Northern and Central Asia. They are not very distinctly but still conveniently for descriptive purposes, divided into two groups, the Northern and the Southern.

a. The former, or Mongolo-Altaic group, are united by the affinities of their language. These people, from the cradle of their race in the great central plateau of Asia, have at various times poured out their hordes upon the lands lying to the west, and have penetrated almost to the heart of Europe. The Finns, the Magyars, and the Turks, are each the descendants of one of these waves of incursion, but they have for so many generations intermingled with the peoples through whom they have passed in their migrations, or have found in the countries in which they have ultimately settled, that their original physical characters have been completely modified. Even the Lapps, that diminutive tribe of nomads inhabiting the most northern parts of Europe, supposed to be of Mongolian descent, show so little of the special attributes of that branch, that it is difficult to assign them a place in it in a classification based upon physical characters. The Japanese are said by their language to be allied rather to the Northern than to the following branch of the Mongolian stock.

b. The southern Mongolian group, divided from the former chiefly by language and habits of life, includes the greater part of the population of China, Thibet, Burmah, and Siam.

C. The next great division of Mongoloid people is the Malay, subtypical it is true, but to which an easy transition can be traced from the most characteristic members of the type.

D. The brown Polynesians, Malayo-Polynesians, Mahoris, Sa-

waioris, or Kanakas, as they have been variously called, seen in their greatest purity in the Samoan, Tongan, and Eastern Polynesian Islands, are still more modified, and possess less of the characteristic Mongolian features; but still it is difficult to place them anywhere else in the system. The large infusion of the Melanesian element throughout the Pacific must never be forgotten in accounting for the characters of the people now inhabiting the islands, an element in many respects so diametrically opposite to the Mongolian, that it would materially alter the characters, especially of the hair and beard, which has been with many authors a stumbling-block to the affiliation of the Polynesian with the Mongol stock. The mixture is physically a fine one, and in some proportions produces a combination, as seen, for instance, in the Maories of New Zealand, which in all definable characters approaches quite as near, or nearer, to the Caucasian type, than to either of the stocks from which it may be presumably derived. This resemblance has led some writers to infer a real extension of the Caucasian element at some very early period into the Pacific Islands, and to look upon their inhabitants as the product of a mingling of all three great types of men. Though this is a very plausible theory, it rests on little actual proof, as the combination of Mongolo-Malayan and Melanesian characters in different degrees, together with the local variations certain to arise in communities so isolated from each other and exposed to such varied conditions as the inhabitants of the Pacific Islands, would probably account for all the modifications observed among them.

E. The native population (before the changes wrought by the European conquest) of the great continent of America, excluding the Eskimo, present, considering the vast extent of the country they inhabit and the great differences of climate and other surrounding conditions, a remarkable similarity of essential characters, with much diversity of detail.

The construction of the numerous American languages, of which as many as twelve hundred have been distinguished, is

said to point to unity of origin, as, though widely different in many respects, they are all, or nearly all, constructed on the same general grammatical principle—that called *polysynthesis*—which differs from that of the languages of any of the Old World nations. The mental characteristics of all the American tribes have much that is in common; and the very different stages of culture to which they had attained at the time of the conquest, as that of the Incas and Aztecs, and the hunting or fishing tribes of the north and south, which have been quoted as evidence of diversities of race, were not greater than those between different nations of Europe, as Gauls and Germans on the one hand, and Greeks and Romans on the other, in the time of Julius Cæsar. Yet all these were Aryans, and in treating the Americans as one race it is not intended that they are more closely allied than the different Aryan people of Europe and Asia. The best argument that can be used for the unity of the American race—using the word in a broad sense—is the great difficulty of forming any natural divisions founded upon physical characters. The important character of the hair does not differ throughout the whole continent. It is always straight and lank, long and abundant on the scalp, but sparse elsewhere. The colour of the skin is practically uniform, notwithstanding the enormous differences of climate under which many members of the group exist. In the features and cranium certain special modifications prevail in different districts, but the same forms appear at widely-separated parts of the continent. I have examined skulls from Vancouver's Island, from Peru, and from Patagonia, which were almost undistinguishable from one another.

Naturalists who have admitted but three primary types of the human species, have always found a difficulty with the Americans, hesitating between placing them with the Mongolian or so-called "yellow" races, or elevating them to the rank of a primary group. Cuvier does not seem to have been able to settle this point to his own satisfaction, and leaves it an open question. Although the large majority of Americans have in

the special form of the nasal bones, leading to the characteristic high bridge of the nose of the living face, in the well-developed superciliary ridge and retreating forehead, characters which distinguish them from the typical Asiatic Mongol, in many other respects they resemble them so much that, although admitting the difficulties of the case, I am inclined to include them as aberrant members of the Mongolian type. It is, however, quite open to any one adopting the Negro, Mongolian, and Caucasian as primary divisions, to place the Americans apart as a fourth.

Now that the high antiquity of man in America, perhaps as high as that which he has in Europe, has been discovered, the puzzling problem, from which part of the Old World the people of America have sprung, has lost its significance. It is quite as likely that the people of Asia may have been derived from America as the reverse. However this may be, the population of America had been, before the time of Columbus, practically isolated from the rest of the world, except at the extreme north. Such visits as those of the early Norsemen to the coasts of Greenland, Labrador, and Nova Scotia, or the possible accidental stranding of a canoe containing survivors of a voyage across the Pacific or the Atlantic, can have had no appreciable effect upon the characteristics of the people. It is difficult, therefore, to look upon the anomalous and special characters of the American people as the effects of crossing, as was suggested in the case of the Australians, a consideration which gives more weight to the view of treating them as a distinct primary division.

III. The Caucasion, or white division, according to my view, includes the two groups called by Professor Huxley Xanthochroi and Melanochroi, which, though differing in colour of eyes and hair, agree so closely in all other anatomical characters, as far, at all events, as has at present been demonstrated, that it seems preferable to consider them as modifications of one great type than as primary divisions of the species.

Whatever their origin, they are now intimately blended,

though in different proportions, throughout the whole of the region of the earth they inhabit; and it is to the rapid extension of both branches of this race that the great changes now taking place in the ethnology of the world are mainly due.

A. The Xanthochroi, or blonde type, with fair hair, eyes, and complexion, chiefly inhabit Northern Europe—Scandinavia, Scotland, and North Germany—but, much mixed with the next group, they extend as far as Northern Africa and Affghanistan. Their mixture with Mongoloid people in North Europe has given rise to the Lapps and Finns.

B. Melanochroi, with black hair and eyes, and skin of almost all shades from white to black. They comprise the great majority of the inhabitants of Southern Europe, Northern Africa, and South-west Asia, and consist mainly of the Aryan, Semitic, and Hamitic families. The Dravidians of India, the Veddahs of Ceylon, and probably the Ainos of Japan, and the Maoutze of China, also belong to this race, which may have contributed something to the mixed character of some tribes of Indo-China and the Polynesian Islands, and, as before said, given at least the characters of the hair to the otherwise Negroid inhabitants of Australia. In Southern India they are probably mixed with a Negrito element, and in Africa, where their habitat becomes conterminous with that of the Negroes, numerous cross races have sprung up between them all along the frontier line. The ancient Egyptians were nearly pure Melanochroi, though often showing in their features traces of their frequent intermarriages with their Ethiopian neighbours to the south. The Copts and fellahs of modern Egypt are their little-changed descendants.

In offering this scheme of classification of the human species I have not thought it necessary to compare it in detail with the numerous systems suggested by previous anthropologists. These will all be found in the general treatises on the subject. As I have remarked before, in its broad outlines it scarcely differs from that proposed by Cuvier nearly sixty years ago, and that the enormous increase of our knowledge since that time should

have caused such little change, is the best testimony to its being a truthful representation of the facts. Still, however, it can only be looked upon as an approximation. Whatever care be bestowed upon the arrangement of already acquired details, whatever judgment be shown in their due subordination one to another, the acquisition of new knowledge may at any time call for a complete or partial re-arrangement of our system.

Happily such knowledge is being abundantly brought in by workers in many lands, and, among others, by members of our own Institute, whose contributions, published in our *Journal*, form no mean addition to the general advancement of the science.

This leads me to speak of some of our own more immediate affairs. During the past year two members of our Council have been removed by death. Dr. Allen Thomson was for many years an eminent and successful teacher of human anatomy in the University of Glasgow. His researches into the history of the early stages of development of the embryo gained him a world-wide reputation, and he was beloved by all who knew him personally for the singular modesty and gentleness of his nature. He had been a Vice-President of the Institute, and a contributor to its proceedings. Mr. Alfred Tylor, the brother of our distinguished former President Dr. E. B. Tylor, though greatly interested in many branches of Anthropology, and a frequent attendant at our meetings, was better known as a geologist. He died at his residence at Carshalton, on the last day of 1884, in the sixty-first year of his age.

At the conclusion of my address last year, I announced that a critical time was coming for the Institute, as circumstances had rendered a change of domicile a necessity. The rooms in St. Martin's Place, in which the Institute had met since its foundation, were required for Government purposes, and we were obliged to move elsewhere. I think it will be generally admitted that the accommodation we have succeeded in obtain-

ing is in every way superior to that which we left behind, and the annual cost will be but very trifling in excess of that we were paying before. The expenses of moving and of new fittings have, however, made a heavy inroad in our slender income, and notwithstanding the special assistance of some of our members to meet it, it was necessary to sell out a portion of our capital stock. We ought to replace this, if possible; and, what is still more important, we ought to have the means of spending more money upon our publications, especially in illustrations, and more upon our library, for the increase of which we are chiefly dependent upon donations. Binding our serial publications is an item for which provision should especially be made. We should also look forward to the time when the inevitable extension of our collection of books will require additional accommodation. For all these necessities, we need, as I have often said before, additional members. At the present time, as you will have gathered from the Report of the Council, we are stationary in this respect; but our change of abode ought be a starting point for acquiring a wider circle of interest in our work.

Under the guidance of our able and painstaking Director, Mr. Rudler, and presided over by the gentleman who I trust you will in a few minutes elect in my place, the Institute can not but flourish. Mr. Francis Galton is, as you all know, a man of most versatile genius. As an explorer of regions where man may be studied under conditions most opposite to those which obtain in our island he is well known. In one of his early adventurous expeditions he visited Khartoum, a place as then unknown to English ears as it is now unhappily familiar. His subsequent journey in the opposite extremity of the African continent led to the publication of very useful observations, as well as the work called "The Art of Travel." His ingenious researches on the subject of characteristics transmitted by inheritance, and his methods of testing physical capabilities, have frequently been brought before the notice of the Institute.

His anthropometric laboratory, organised last year at the International Health Exhibition, brought before thousands the interest and importance of the subject. I have much satisfaction in resigning into his hands the office with which you have honoured me for two consecutive years.

It was moved by Mr. F. GALTON, seconded by Mr. E. W. BRABROOK, and carried unanimously—

“That the thanks of the meeting be given to the President for his address, and that it be printed in the *Journal* of the Institute.”

The Scrutineers gave in their report, and the following gentlemen were declared to be duly elected to serve as Officers and Council for the year 1885 :—

President.—Francis Galton, Esq., M.A., F.R.S.

Vice-Presidents.—Hyde Clarke, Esq.; John Evans, Esq., D.C.L., F.R.S.; Prof. W. H. Flower, LL.D., F.R.S.; Lieut.-Col. H. H. Godwin-Austen, F.R.S.; Major-General Pitt Rivers, F.R.S.; E. B. Tyrol, Esq., D.C.L., F.R.S.

Director.—F. W. Rudler, Esq., F.G.S.

Treasurer.—F. G. H. Price, Esq., F.S.A.

Council.—S. E. B. Bouverie-Pusey, Esq.; E. W. Brabrook, Esq.; F.S.A.; C. H. E. Carmichael, Esq., M.A.; W. L. Distant, Esq., A. W. Franks, Esq., M.A., F.R.S.; J. G. Garson, Esq., M.D.; Prof. Huxley, F.R.S.; Prof. A. H. Keane, B.A.; A. L. Lewis, Esq.; Sir J. Lubbock, Bart., M.P.; R. Biddulph Martin, Esq., M.P.; Prof. A. Macalister, F.R.S.; J. E. Price, Esq., F.S.A.; C. H. Read, Esq., F.S.A.; Charles Roberts, Esq., F.R.C.S.; Lord Arthur Russell, M.P.; W. G. Smith, Esq., F.L.S.; Prof. G. D. Thane; C. Staniland Wake, Esq.; M. J. Walhouse, Esq., F.R.A.S.

Prof. A. H. KEANE moved, and Mr. G. W. ATKINSON seconded, a vote of thanks to the retiring members of the Council, to the Auditors, and to the Scrutineers, which was carried unanimously.

A vote of thanks to Mr. RUDLER for his services as Director and Editor of the *Journal* was moved by Mr. A. L. LEWIS, seconded by Dr. GARSON, and carried by acclamation.

ANTHROPOLOGICAL MISCELLANEA.**ANNUAL REPORT of the BUREAU of ETHNOLOGY, 1880-1.**

(*Washington Government Printing Office, 1883*).

THE noble volume containing the "Second Annual Report of the Bureau of Ethnology, to the Secretary of the Smithsonian Institution," contains several articles of great interest, admirably and profusely illustrated. The first is an instalment of Mr. Frank Cushing's report on the Zuñis, among whom he has lived for several years, during which time he has not only become a member of the community by adoption, but has also been admitted to the "Priesthood of the Bow." This has given him exceptional opportunities of examining into the nature of their beliefs, and of describing the peculiar customs and ceremonies connected therewith; and the account he here gives of their philosophy, and that which may be termed their animistic fetishism, cannot fail to interest all students of anthropology; and especially of that branch of the science which treats of the development of religion.

The myths of the Zuñis are embodied in a long unwritten epic, publicly recited every four years, but only to the priests, and Mr. Cushing, although admitted to the priesthood, was only permitted to listen to one-fourth of it in 1881, the date of the last recitation. Their worship appears to be directed not only to sun, moon, stars, and all the forces of Nature, but to every natural object, animate and inanimate, which are all supposed to be connected together in one system of relationship, of which man is the centre. "In just so far as an organism, actual or imaginary, resembles that of man, is it believed to be related to him and correspondingly mortal; in just so far as it is mysterious, is it considered removed from him, further advanced, powerful, and immortal. It thus happens that the animals, because alike mortal and endowed with similar physical functions and organs, are considered more nearly related to man than are the gods; more nearly related to the gods than is man, because more mysterious, and characterized by specific instincts and powers which man does not possess." They have no general term for God, but there are many anthropomorphic, monstrous and elemental beings, godlike in attributes, known as the "finishers or makers of the paths (of our lives)," whilst the most superior of all is called "Holder of the paths (of our lives)." Their fetishes are either natural forms resembling prey-animals, or carvings of great antiquity representing these animals, which are regarded as the animals themselves, turned into

stone by two children of the sun-father, using as their weapons the rainbow and the lightning; hence these fetishes are supposed to possess magic power over the game. Chief among these are images of the mountain lion, bear, badger, wolf, eagle, and mole, presiding over north, west, south, east, the Above and the Below. Fetishes of these prey-gods, generally adorned with beads and a flint arrow head, are kept with great care and brought out on a special day for worship; one is lent to a party of hunters, and is carefully carried in a crescent-shaped bag, taken out and addressed in prayer, dipped in the blood of the slaughtered animal, and restored to the keeper at the end of the expedition. In addition to these prey-god fetishes, the priesthood of the Bow possesses a god in human form, called the "Knife-feathered monster," which is depicted on their shield, and is strongly suggestive of Egyptian or Assyrian art.

As Mr. Cushing has returned to New Mexico, we may hope for further notices of this interesting people, whose works of art, with those of neighbouring tribes in New Mexico and Arizona, are illustrated in the last article of the volume before us, which is a "Catalogue of a Collection obtained from the Indians in 1879, by James Stephenson." Of these, some are ancient, obtained from ruined *pueblos*, and some are modern. Most of the pottery, in colour, form, and ornamentation, bears a strong resemblance to early Greek, Etruscan, and Peruvian ware, as also to that from Hissarlik; but there are some forms which seem peculiar to the region, especially the clay baskets and ladles. The stone mauls and hammers appear to be precisely like the European, and there is a weapon fashioned like a boomerang, used in hunting rabbits.

Mrs. Erminie Smith's article on the "Myths of the Iroquois" consists of a series of tales whereby these Indians explain various natural phenomena, in which, as in the folk-lore of most nations, giants and pygmies play an important part, but the "Great Heads" of these tales seem to be an original conception; they are apparently both good and evil, "with ever-watchful eyes, and long hair, which serves them as wings to bear them on missions of mercy or of destruction."

Mr. Henshaw's paper on "Animal Carvings from Mounds of the Mississippi Valley," is written to prove that Squier and Davis, Wilson and other writers have been mistaken in their estimate of the art of the mound builders, and in supposing that such animals as the manatee, toucan, &c., &c., are represented among their carvings; nevertheless, I believe that the majority of readers will be inclined to adhere to the opinion of the older writers, and will certainly see more likeness to the toucan, in the carving thus designated by Squier and Davis, than to the *ibis* as suggested by Mr. Henshaw, whilst they will hardly be likely to agree with him in regarding all the human heads as caricatures of the American Indian physiognomy.

A paper on "Navajo Silversmiths," by Dr. Washington Matthews, U.S.A., is an interesting account of the method of work and tools employed by these clever artificers.

But the article which will attract the greatest amount of attention, is that upon "Art in Shell of the Ancient Americans," by William H. Holmes. In this beautifully illustrated article we find shells of various kinds applied to so many uses, that we are tempted to add an *age of shell* to those of stone and metal on the American continent.

The specimens figured and described come from mounds in all parts, and represent food and drinking vessels, spoons, pins, fish-hooks, agricultural implements, war-clubs, celts, &c., as well as beads and other ornaments, from plain pendants to elaborately carved gorgets. The carvings on these gorgets are varied from a simple cross, to wonderfully designed and artistically executed figures, representing geometrical patterns, birds, the rattlesnake, spiders, and the human form, often curiously conventionalized: and in some cases spirited designs of combats, &c., the singular part in which is, that they are almost identical with carvings from Mexico and Nicaragua, although found in Tennessee; the mounds from this latter state seem to have furnished the majority of these works in shell, although some are from Missouri, Alabama, Georgia, and New York. Among the most curious of the finds are a number of faces rudely pourtrayed, and supposed to be masks; these also are chiefly from Tennessee, but they have been found in Kentucky, Virginia, Illinois, Missouri and Arkansas. The shell chiefly used for these ornaments is *Busycon perversum*, and its presence so far inland is a proof of long continued intercourse between the mound builders and the people dwelling on the coast whence these shells were obtained.

Another very interesting part of this article describes the manufacture and use of *wampum*, giving the mode of making the beads from the inner whorl of the shell, and the history of many famous wampum belts.

It may be safely affirmed that the volume before us, with its predecessor, will prove a mine of wealth to students of American archaeology, and it is greatly to be regretted that our own scientific societies, being unaided by government, are unable to rival the Smithsonian Institution in their publications, especially in the matter of illustrations, which are so valuable to students.

A. W. BUCKLAND.

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